The Clean Development Mechanism projects in the Philippines

Costly Dirty Money-Making schemes

FOCUS ON THE GLOBAL SOUTH

Focus on the Philippines
SPECIAL REPORTS

No. 3
June 2010

Focus on the Philippines Special Reports are in-depth and comprehensive reports on specific aspects of pressing contemporary issues.

FOCUS ON THE GLOBAL SOUTH
Focus on the Global South is a non-profit policy analysis, research and campaigning organisation, working in national, regional and international coalitions and campaigns, and with social movements and grassroots organisations on key issues confronting the global south. Focus was founded in 1995 and is attached to the Chulalongkorn University Social Research Institute (CUSRI) in Bangkok, Thailand. It has programs in the Philippines and India.

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First published June 2010

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ABOUT THE COVER PHOTO
The Northwind Bangui Bay wind power project is one of the Clean Development Mechanism (CDM) projects in the Philippines. Every ton of greenhouse gas emission it claims to reduce allows a rich country to exceed its pollution caps by an equivalent ton. (Photo by Kristoffer Ordoñez)

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ISBN : 978-971-92886-9-5

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Summary

The Clean Development Mechanism (CDM) is a scheme under an international climate change agreement that allows developed countries to buy "credits" from projects that supposedly reduce greenhouse gas emissions in developing countries, instead of cutting their own emissions domestically. In so doing, the scheme claims to be mitigating climate change while also promoting sustainable development. An evaluation of existing CDM projects in the Philippines as of June 2009, however, raises questions as to whether the scheme is in fact undermining its own purported aims: Most of the "credits" being generated will go to projects that further exacerbate climate change and compromise sustainable development, enriching large conglomerates that are expanding extractive and fossil fuel-intensive activities, in pursuit of objectives that could otherwise be achieved through more effective government regulation and community action. Rather than allowing governments and communities to embark on a just transition towards a more sustainable path, the CDM is rewarding government ineptitude and supporting the very agents that contribute to climate change—while allowing rich countries to continue avoiding the reductions necessary to mitigate climate change.

Introduction

On a crest of the foothills of the Sierra Madre mountain range overlooking the Philippines' sprawling, smog-drenched capital sits a brand-new power plant.

Quiet and unimposing, it is unlike many of its kind: Large overhead pipes from its engines impale the hillside to connect with an underground network of wells and tubes, only to surface again on the grounds of a neighboring landfill. Carved from the face of the hills, Metro Manila's largest dumping ground stretches down steeply towards the gullies, almost spilling into a river snaking towards the valley that opens onto the city. From below, a procession of trucks climbs here to bury this city's waste: more than 4,000 tons from around 12 million residents daily.[1] The pipes collect the methane gas that decomposing waste produces and feed it into the generators, which then convert it into electricity to be delivered back to the city.

The power plant belongs to the Montalban Methane Power Corporation (MMPC), developers of the Montalban Landfill Methane Recovery and Power Generation Project. Currently the largest Clean Development Mechanism (CDM) project in the Philippines to date [as of June 2009], this project illustrates many of the problematic features besetting the CDM scheme, as will be discussed in this report. Dependent on more waste to produce electricity—and therefore on the failure of an existing law that aims to reduce waste—the Montalban project provides additional income to a giant mining conglomerate with a record of pollution and human rights violations.

1 Japan Engineering Consultants Company Limited, "Rodriguez Landfill Methane Recovery and Electricity Generation CDM Project Feasibility Study Report," May 2007, 25, http://cdm.unfccc.int/UserManagement/FileStorage/UANVTQC2ZO4NFMXK4YIWZXZDBGNUTD (accessed June 29, 2009); National Statistical Coordination Board, "Population by Region," http://www.nscb.gov.ph/secstat/d_popn.asp (accessed June 29, 2009).

The Clean Development Mechanism

Though still little known, the CDM is an increasingly controversial scheme introduced as part of an international agreement to address climate change.

Under the Kyoto Protocol, 38 industrialized countries are required to cut their greenhouse gas emissions by an average of 5% below 1990 levels by 2008-2012.[2] (See **Table 1: Developed Countries' Emission Reduction Targets under the Kyoto Protocol**) Countries that fail or that find it more expensive to reduce their emissions domestically can emit more than their assigned limits, however, as long as they buy "allowances" from other industrialized countries that emit less than their allowed limits.[3] Or, through the CDM scheme, they can opt to buy "credits" from projects in developing countries that supposedly reduce the equivalent greenhouse gas emissions that they would emit domestically.[4] In effect, the CDM allows industrialized countries to exceed their emission caps as long as they "offset" each excess ton of emission with an equivalent ton of emission supposedly reduced by CDM projects such as the one in Montalban.

For example, under the Kyoto Protocol, industrialized Country A is required to cut its emissions from 100 million tons in 1997 to 95 million tons by 2008. Country A can choose to reduce its emissions domestically by 5 million tons, or—if it calculates that it will be cheaper to just buy allowances or credits from other countries—it can still choose to go on emitting 95 million tons or more. If by 2008, Country A's emissions were, say, 110 million tons, it can just opt to buy 10 million tons of allowances from another country plus 5 million tons worth of credits from CDM projects—

2 The Kyoto Protocol came into force in 2005 after it was ratified by 127 countries responsible for 61% of greenhouse gas emissions. The Philippines ratified it in November 2003.

3 It is up to each country to decide to allocate and distribute their allotted allowances.

4 Developed countries can also buy "credits" from other industrialized countries, mostly "economies in transition" such as the former Soviet republics. This scheme is called "Joint Implementation."

TABLE 1
Developed Countries' Emission Reduction Targets under the Kyoto Protocol

Developed Country	Target Reductions *
Austria	-8
Belgium	-8
Bulgaria	-8
Canada	-6
Czech Republic	-8
Denmark	-8
Estonia	-8
European Community	-8
Finland	-8
France	-8
Germany	-8
Greece	-8
Hungary	-6
Iceland	10
Ireland	-8
Italy	-8
Japan	-6
Latvia	-8
Liechtenstein	-8
Lithuania	-8
Luxembourg	-8
Monaco	-8
Netherlands	-8
New Zealand	0
Norway	1
Poland	-6
Portugal	-8
Romania	-8
Russian Federation	0
Slovakia	-8
Slovenia	-8
Spain	-8
Sweden	-8
Switzerland	-8
Ukraine	0
United Kingdom	-8
All developed country signatories to Kyoto Protocol	-5

* as percentage of 1990 emissions level

Source: United Nations Framework Convention on Climate Change, "Changes in GHG emissions from 1990 to 2004 for Annex I Parties," http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/ghg_table_06.pdf [Accessed 29 June 2009]

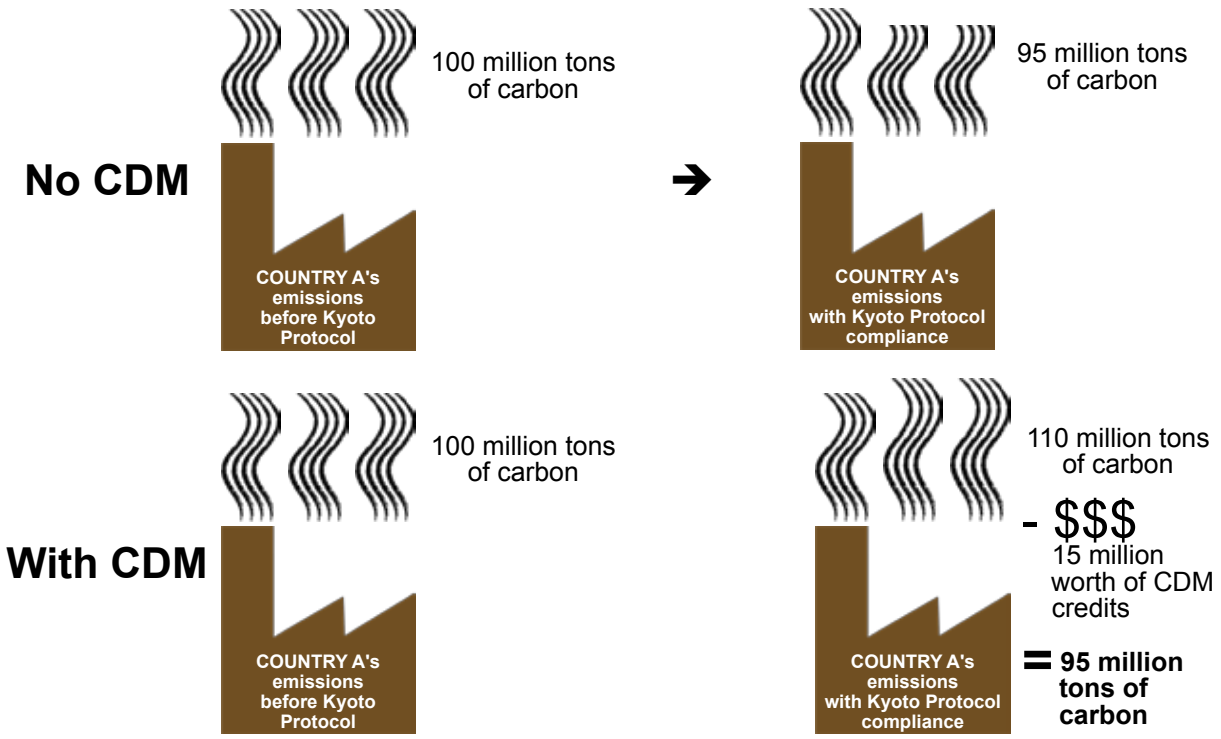
To open the Montalban landfill, large patches of hillside vegetation—in an area considered to be part of a watershed—had to be cleared. (*By Sonny Yabao*)

or a total of 15 million tons—and still be considered in compliance with the Kyoto Protocol. (**Figure 1: Schematic Illustration of Carbon Trading**) On the assumption that reductions have the same impact on the climate wherever they are made, the CDM allows richer countries to pay CDM projects in poorer countries to do what these richer countries should be doing at home instead.

By capturing and converting methane from trash to electricity, for example, the Montalban power plant claims that it will "reduce" emissions by around 5.9 million tons worth of carbon dioxide in ten years. Along with the electricity it produces, the plant's owners can also sell each ton of "reduction" as a "certified emission reduction (CER) unit," upon approval by CDM authorities at the national level (in the Philippines, the Department of Environment and Natural Resources), and then at the CDM Board based in Geneva.

In effect, the CDM allows industrialized countries to exceed their emission caps as long as they "offset" each excess ton of emission with an equivalent ton of emission supposedly reduced by CDM projects.

FIGURE 1
Schematic Illustration of Carbon Trading



According to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, each CER could be worth between US$13.5 to $33.75 per unit from 2008-2012, but the actual price at any given time will depend on the carbon market and on particular arrangements between CDM investors.[5] (Note: To indicate magnitude and allow for comparisons between projects—but not to predict exact amounts—CDM revenues will be estimated throughout this report using this UNFCCC range and a US dollar-to-Philippine peso exchange rate band. See **Annex 1: Calculation of Estimated CDM Revenues from the Philippines** for details.) By this estimate, the Montalban project could earn between ₱3.4 billion to ₱10.5 billion from the CDM over its 10-year crediting period.

In the case of the Montalban project, its CERs will go to Carbon Capital Markets, a London-based carbon trading investment and brokerage firm which put funds in the project and which will earn CERs in return for its investment. It can re-sell the CERs from Montalban to companies such as coal power plants or cement plants covered by emission caps in Europe or elsewhere. Each ton of carbon supposedly reduced by the Montalban project will be sold and bought to allow a ton of carbon to be emitted elsewhere.

5 United Nations Framework Convention on Climate Change, *Investment And Financial Flows To Address Climate Change* (Bonn, Germany: 2007), 143.

CDM in the Philippines

The Montalban project is just one of a growing number of CDM projects in developing countries around the world, supposedly reducing greenhouse gas emissions through an expanding global carbon market.

As of June 2009, a total of 1,683 CDM projects have been registered, generating 305 million tons of "reductions" annually, or 1.6 billion tons by 2012. (See **Table 2: Snapshot of CDM Statistics**) Estimated to be worth between $38 to $54 billion,[6] the value of these "reductions" is equivalent to between one-fourth to three-fifths of the value of all goods and services produced by the Philippines in 2008.[7] (**Figure 2: Total Maximum Expected CDM Revenues and 2008 Philippine GNP**)

Over 2,500 projects are undergoing the process of registration or validation, expected to generate about 1.3 billion more tons of reductions.[8] Between 2013-2020, another 5.9 billion tons of "reductions" are projected to be added.[9] Adding all this yields around 8.8 billion tons—equivalent to the annual total per capita emissions of over half of the population in all developing countries in 2000. [10]

Around two-fifths of all CERs or CDM credits are bought by buyers from the United Kingdom. China

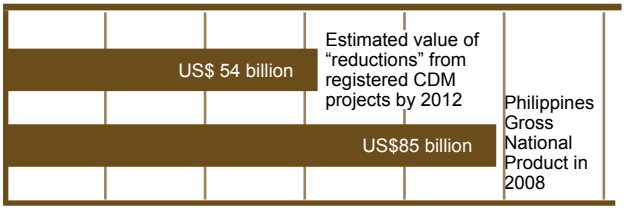
TABLE 2
Snapshot of CDM Statistics

Number of registered CDM projects	1,683
Number of projects in the process of being registered	2,500+
Total claimed emissions "reductions" from registered projects by 2012	1.6 billion tons
Total claimed emissions "reductions" from projects in the process of being registered	1.3 billion tons
Total projected emissions "reductions" between 2013-2020	5.9 billion tons
Estimated price per ton of "reduction"	US$23.6- 33.75/ ton
Estimated value of "reductions" from registered projects by 2012	US$38-54 billion

As of June 2009

Source: Clean Development Mechanism "CDM Statistics," http://cdm.unfccc.int/Statistics/index.html (accessed June 20, 2009); United Nations Environment Program Risoe Centre on Energy, Climate and Sustainable Development (URC), "CDM/JI Pipeline Overview Page," http://www.cdmpipeline.org/overview.htm#2 (accessed June 20, 2009); United Nations Framework Convention on Climate Change, Investment And Financial Flows To Address Climate Change, (Bonn, Germany: 2007), 143.

FIGURE 2
Total Maximum Expected CDM Revenues and 2008 Philippine GNP



Source:

For estimated value of "reductions, see Annex X: Calculation of Estimated CDM Revenues from the Philippines; Gross National Product from Central Bank of the Philippines, "Gross National Product at constant 1985 prices," http://www.bsp.gov.ph/statistics/spei_new/tab45.htm [Accessed 29 June 2009]

TABLE 3
Snapshot of Philippine CDM Statistics

Number of Registered Projects	32
Number of Projects undergoing registration	45
Total claimed emissions reductions from registered projects	12 million tons
Total claimed emissions reductions from projects undergoing registration	10 million tons

As of June 2009

Source: Clean Development Mechanism "CDM Statistics," http://cdm.unfccc.int/Statistics/index.html [Accessed 20 June 2009]; United Nations Environment Program Risoe Centre on Energy, Climate and Sustainable Development (URC), "CDM/JI Pipeline Overview Page," http://www.cdmpipeline.org/overview.htm#2 (accessed June 20, 2009).

6 Estimated using the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat's estimated range of US$23.60 to US$33.75 per CER for the period 2008-2012 [United Nations Framework Convention on Climate Change, *Investment And Financial Flows To Address Climate Change*, 143].

7 Central Bank of the Philippines, "Gross National Product at constant 1985 prices," http://www.bsp.gov.ph/statistics/spei_new/tab45.htm (accessed June 29, 2009).

8 Clean Development Mechanism "CDM Statistics," http://cdm.unfccc.int/Statistics/index.html (accessed June 29, 2009).

9 United Nations Environment Program Risoe Centre on Energy, Climate and Sustainable Development (URC), "CDM/JI Pipeline Overview Page," http://www.cdmpipeline.org/overview.htm#2 (accessed June 29, 2009).

10 Per capita emissions in developing countries (defined as "Non-Annex 1" countries under the UNFCCC) was 3.2 tons CO_2 in 2000. Developing countries' population was 5.1 billion. World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0* (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ (accessed June 29, 2009).

is by far the biggest seller, producing over four-fifths of all credits sold; each of the other developing countries participating in the scheme accounts for no more than 4% of credits sold.[11] (See **Figure 3: Locations of CDM Buyers; Figure 4: Location of CDM Sellers**)

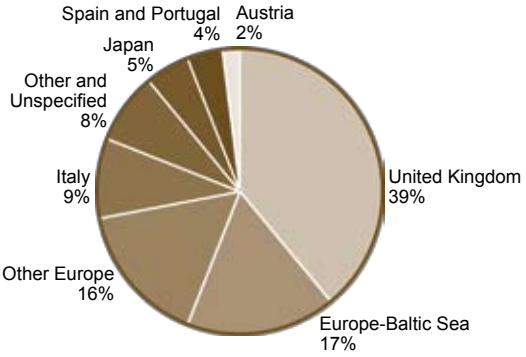
CDM projects in the Philippines constitute a small but growing percentage of this total. As of June 2009, 32 projects have been registered, with another 45 projects still in the process of being registered. Projects that are already successfully registered claim that they will reduce around 1.4 million tons annually or over 12 million tons in the next 7 to 10 years; those in the pipeline are expected to add another 10 million tons more, for a total of 22 million tons. (See **Table 3: Snapshot of Philippine CDM Statistics**) This is equivalent to the annual per capita emissions of around 13 million people in the Philippines, or nearly a fifth of the population.[12] (See **Table 4: Expected Emissions Reductions from CDM projects and Philippine per capita emissions**)

Depending on the market price of carbon, exchange rates, and actual verified reductions, all the currently registered projects in the Philippines could collectively earn around ₱0.8 billion to ₱2.5 billion annually. Assuming they are all successfully registered, projects in the pipeline could potentially earn another ₱0.8 billion to ₱2.4 billion per year. For the duration of their crediting periods, registered projects stand to earn between ₱7 billion to ₱22 billion while projects in the process of registration may add another ₱6 billion to ₱18 billion in revenues. Over-all, CDM projects in the Philippines could earn a total of between ₱13 billion to ₱40 billion to date. (See **Table 5: Summary of Calculation of Estimated CDM Revenues**

11 Karan Capoor and Philippe Ambrosi, "State and Trends of Carbon Market 2009," World Bank, May 2009, 33;35, http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State___Trends_of_the_Carbon_Market_2009-FINAL_26_May09.pdf (accessed June 29, 2009).

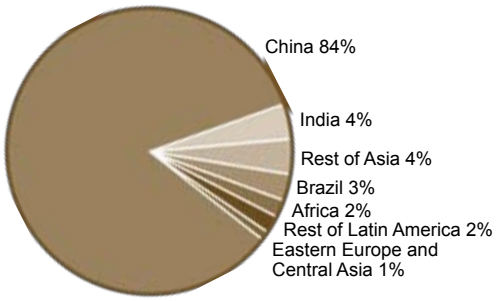
12 Per capita emissions in the Philippines was 1.7 tons CO_2 in 2000 [World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*]; Philippine population stood at 76 million as of 2000 [National Statistical Coordination Board, "Population of the Philippines."]

FIGURE 3
Location of CDM Buyers



Source: Karan Capoor and Philippe Ambrosi, "State and Trends of Carbon Market 2009," World Bank, May 2009, p.33, http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State___Trends_of_the_Carbon_Market_2009-FINAL_26_May09.pdf [Accessed 29 June 2009]

FIGURE 4
Location of CDM Sellers



Source: Karan Capoor and Philippe Ambrosi, "State and Trends of Carbon Market 2009," World Bank, May 2009, p.35, http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State___Trends_of_the_Carbon_Market_2009-FINAL_26_May09.pdf [Accessed 29 June 2009]

TABLE 4
Expected Emissions Reductions from CDM projects and Philippine per capita emissions

Total claimed emissions reductions from registered projects *	12 million tons
Total claimed emissions reductions from projects undergoing registration *	10 million tons
Average annual emissions per person in the Philippines in 2000	1.7 tons
Total greenhouse gas emissions in the Philippines in 2000	128 million tons

* for duration of crediting period

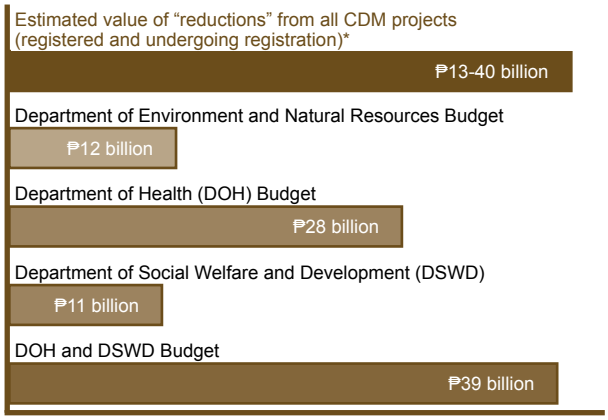
Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ (accessed June 29, 2009); National Statistical Coordination Board, "Population of the Philippines," http://www.nscb.gov.ph/secstat/d_popn.asp (accessed June 29, 2009).

TABLE 5
Summary of Calculation of Estimated CDM Revenues from the Philippines

Estimated value of "reductions" from registered projects to date	₱ 7-22 billion
Estimated value of "reductions" from projects undergoing registration	₱ 6-18 billion

Source: See Annex 1: Calculation of Estimated CDM Revenues from the Philippines for details

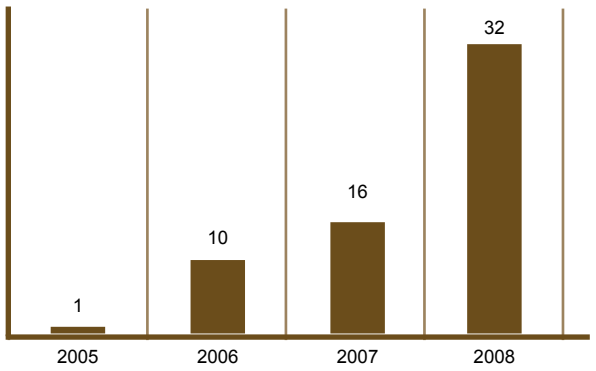
FIGURE 5
Estimated CDM Revenues from the Philippines Compared with Selected Government Agencies' Budgets (2009)



* assuming all projects undergoing registration get approved

Source: See Annex 1: Calculation of Estimated CDM Revenues from the Philippines for details; for Department budgets, see Republic Act Number 9524: General Appropriations Act Fiscal Year 2009, http://www.dbm.gov.ph/index.php?pid=8&xid=28&id=989 [Accessed 29 June 2009]

FIGURE 6
Number of CDM Projects Approved at National Level per Year



Source: Institute for Global Environmental Strategies, "CDM Country Factsheet: Philippines," May 2009 http://enviroscope.iges.or.jp/modules/envirolib/upload/984/attach/philippines_final.pdf [Accessed 29 June 2009]

from the Philippines; Annex 1: Calculation of Estimated CDM Revenues from the Philippines)

To get a sense of the size of these amounts, the total expected revenues from all CDM projects in the country is equivalent to the current average family income of between 75,000 to 230,000 Filipino families; it would be enough to pay 140,000 to 450,000 workers a year's worth of minimum wage.[13] The lower limit is equivalent to the total budget of the Philippines' environmental ministry, the Department of Environment and Natural Resources (DENR); the upper limit is nearly the same as the combined budgets of the Department of Health and the Department of Social Welfare and Development for 2009.[14] (**Figure 5: Estimated CDM Revenues from the Philippines and Selected Government Agencies' Budgets**)

And this is just the beginning. Each year, the government gives "national approval" to more CDM projects. (See **Figure 6: Number of CDM Projects Approved at National Level per Year**) With more projects on the planning board – and with industrialized countries demanding more credits to "offset" their rising emissions – expected revenues from the CDM could likewise soar. For now, the Philippines accounts for just around 2% of the total number of projects and around 0.5% of total CERs generated annually, far behind China. But the government is determined to catch up. DENR Secretary Lito Atienza, who heads the agency in charge of screening CDM projects at the national level, has declared that the Philippine government will be more aggressive in pursuing CDM projects.[15]

13 The average family income in the Philippines is P173,000, as of the latest available data [National Statistics Office Official Website, "2003 and 2006 Family Income and Expenditure Survey, Final Results," http://www.census.gov.ph/data/sectordata/2006/ie06fr01.htm (accessed June 29, 2009)]. The lower limit of the minimum wage for the non-agricultural sector in the National Capital Region is ₱345 as of July 2009 [National Wages and Productivity Commission, "Summary of Current Regional Daily Minimum Wage Rates," http://www.nwpc.dole.gov.ph/pages/statistics/stat_current_regional.html (accessed June 29, 2009)].

14 Republic Act Number 9524: General Appropriations Act Fiscal Year 2009, http://www.dbm.gov.ph/index.php?pid=8&xid=28&id=989 (accessed June 29, 2009).

15 Katherine G. Adraneda, "Philippines among Asian nations with strong CDM portfolio," *The Philippine Star*, November 12, 2008, http://www.philstar.com/Article.aspx?articleid=414734 (accessed June 29, 2009).

Privatizing the atmosphere

Along with the growing money to be made from the CDM, however, are growing concerns about the scheme. These revolve principally around two related issues: justice and efficacy.

The problem of climate change has been caused mainly by rich industrialized countries that have emitted and continue to emit most of the greenhouse gases in the atmosphere. From 1850 to 2005, developed countries were responsible for an estimated 75% of all cumulative emissions totaling around 1.1 trillion tons of carbon.[16] The top two emitters alone, the US and the European Union member-countries—whose combined population make up 12% of the world's population—account for 56% of the total. Developing countries, despite accounting for around four-fifths of the world's population, emit the remaining quarter.[17] (**Table 6: Cumulative Emissions (1850-2005); Figure 8: Cumulative Emissions (1850-2005)**)

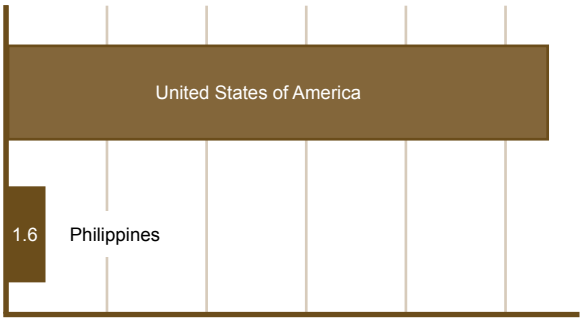
TABLE 6
Cumulative Emissions (1850-2005)

Region/ Country (in tons of CO_2)*	Population as % of world total as of 2005	Total cumulative emissions	Cumulative emissions as % of world total
Developed Countries	19%	839 billion	75%
United States of America	5%	328 billion	29%
European Union (27 members)	8%	302 billion	27%
Developing Countries	80%	267 billion	24%
Philippines	1%	1.9 billion	0.17%

* emissions from energy

Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ (accessed June 29, 2009).

FIGURE 7
Philippines and US Per Capita Emissions (in tons of CO_2)



* emissions from energy

Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ [Accessed 29 June 2009]

From the Philippines, cumulative emissions stand at 0.17% of the total. In 2005, the US emitted an average of about 23.5 tons of greenhouse gases per capita; the Philippines is estimated to have contributed 1.6 tons per capita, or 6% of the US'.[18] (**Figure 7: Philippines and US per capita emissions**) Within the Philippines, some classes and groups also emit more than others, though data on this with respect to the Philippines has yet to be collected.

Despite contributing little to the problem, however, it is mostly people in developing countries that have been and will be negatively affected by the impacts of climate change.[19] Estimates by the UNDP show that around 5,000 in every 100,000 people in developing countries are in danger of being affected by the natural disasters that are expected to be more frequent as a result of climate change. Though high-income countries will also experience climate change impacts, less than 100 per 100,000 people in these

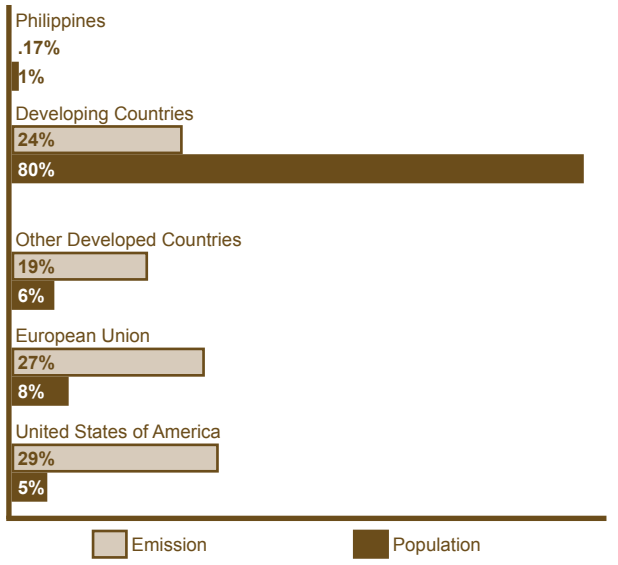
16 Throughout this report, when used in the context of actual greenhouse gas emissions or other relevant measures, "industrialized," "rich," and "developed" countries refer to "Annex 1" parties to the Kyoto Protocol while developing countries refer to "non-Annex 1" countries under the United Nations Framework Convention on Climate Change. But they can take on a more nuanced meaning in other contexts.

17 In 2000, Annex 1 countries accounted for 79% of the world's population [World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0.*]

18 *Ibid.*

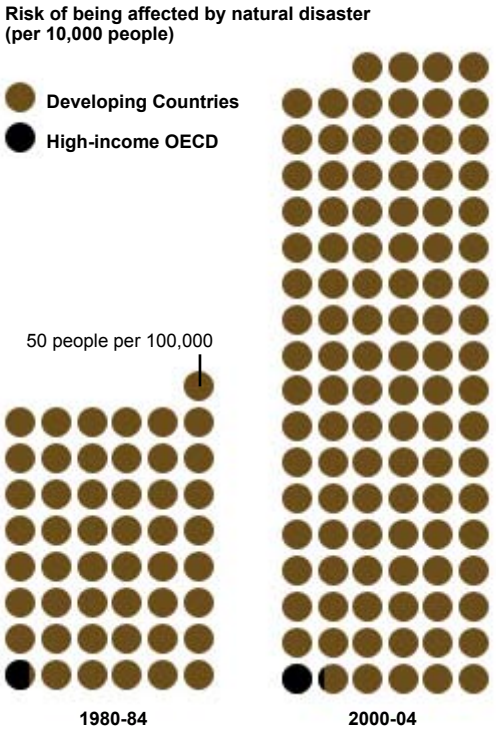
19 According to Nicholas Stern, "The poorest developing countries will be hit earliest and hardest by climate change, even though they have contributed little to causing the problem." [Nicholas Stern, *The Economics of Climate Change* (Cambridge: Cambridge University Press, 2007)].

FIGURE 8
Cumulative Emissions (1850-2005) and Population as % of World Total (2005)



* emissions from energy
Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ [Accessed 29 June 2009]

FIGURE 9
UNDP Disaster Risk Estimates



Source: United Nations Development Programme, Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World (New York: United Nations Development Programme, 2007), http://hdr.undp.org/en/media/HDR_20072008_EN_Complete.pdf (accessed June 29, 2009).

countries are at risk of experiencing such disasters.[20] (**Figure 9: UNDP Disaster Risk Estimates**)

Among the worst to be hit by climate change, according to various projections, will be the Philippines. By the government's own tally, disasters have cost the country around ₱20 billion in damages annually since 1990.[21] The number of extreme weather events that have hit the country since 2004 has already put it among the top five most disaster-prone countries in the world.[22] In 2006, the Philippines placed first among countries "hardest hit" by climate change.[23]

To increase the probability of avoiding catastrophic climate change, the world should emit no more than 1 trillion tons of carbon over the next forty years, according to recent research.[24] This could be seen as the remaining allowable carbon to be used on earth if runaway climate change is to be averted. The creation of a global carbon market—where carbon "allowances" and "credits" could be traded and where corporations are being given formal rights to emit assigned amounts of carbon into the atmosphere—effectively entails assigning private property rights over a portion of this limited resource. Now worth billions of dollars, these rights are considered as "assets" by corporations that received them, and are bought or sold, like any commodity, in the market.[25] In the case of the European Union's Emissions Trading Scheme

20 United Nations Development Programme, *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World* (New York: United Nations Development Programme, 2007), http://hdr.undp.org/en/media/HDR_20072008_EN_Complete.pdf (accessed June 29, 2009).

21 Jose Ramon T. Villarin, Ma. Antonia Y. Loyzaga, Antonio G.M. La Viña, *et al.*, "In the Eye of the Perfect Storm: What the Philippines should do about Climate Change, Working Paper," July 2008, 59, http://www.observatory.ph/SCJ_doc.pdf (accessed June 29, 2009).

22 *Ibid., 62.*

23 Anthony Ian Cruz, "RP most affected by climate change in 2006," *Malaya*, December 15, 2007.

24 Malte Meinshausen, Nicolai Meinshausen, William Hare, *et al.*, "Greenhouse-gas emission targets for limiting global warming to 2°C," *Nature* 458, April 30, April 2009, 1158-1162.

25 Larry Lohmann, ed., "Carbon Trading: A Critical Conversation on Climate Change, Privatization and Power," *Development Dialogue*, no. 48, September 2006 (published by Dag Hammarskjold Foundation, Durban Group for Climate Justice and The Corner House), 75-77, http://www.thecornerhouse.org.uk/pdf/document/carbonDDlow.pdf (accessed February 2, 2009).

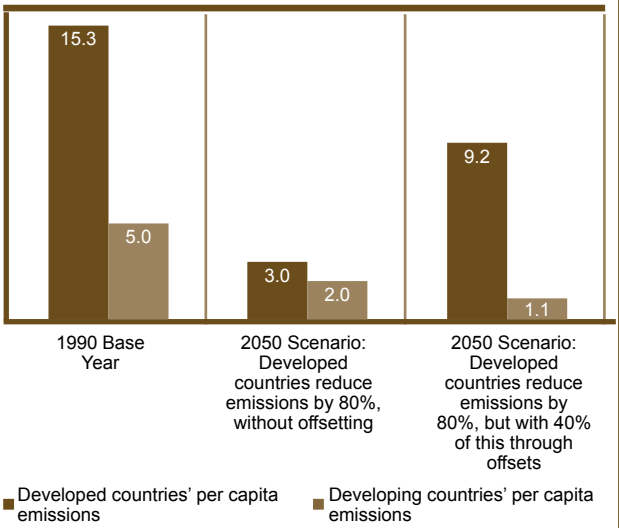
What the CDM does is to allow companies who need more rights to emit above what they have been granted to buy such rights from developing countries (mostly through projects owned by private foreign and local companies) who are also effectively granted property rights over supposed carbon "reductions."

(*ETS*), corporations were given emission rights for free: the larger their emissions in the past, the more free rights—and therefore the more assets—they got.[26]

What the CDM does is to allow those who want more of the asset (companies that need rights to emit above what they have been granted) to buy it from developing countries (mostly through projects owned by private foreign and local companies) who are also effectively granted property rights over supposed carbon "reductions." Each CDM credit represents a payment made by a corporation in a rich country for a poor country not to use the limited resource so that the former can use this resource for itself.

The CDM is therefore part of what is in effect a formal privatization of the earth's atmosphere—a common resource that is now being apportioned by those most responsible for its depletion on the basis of wealth and power rather than on any other criteria. The effect of this is to deepen carbon inequality: In one estimate, if developed countries use offsets to meet 50% of their reduction obligations, their per capita carbon consumption would increase from three times larger to eight times larger than that of developing countries.[27] (See **Figure 10: Effect of Offsetting Mechanisms such as the CDM on Emissions Inequality**)

FIGURE 10
Effect of Offsetting Mechanisms such as the CDM on Emissions Inequality



Source: Third World Network analysis used in Simon Bullock, Mike Childs, and Tom Picken, "A Dangerous Distraction: Why Offsetting is Failing the Climate and the People, "Friends of the Earth England, Wales and Northern Ireland, June 2009, pp. 24-25 http://www.foe.co.uk/resource/briefing_notes/dangerous_distraction.pdf [Accessed 29 June 2009]

26 United States Government Accountability Office, "International Climate Change Programs: Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism," November 2008, 22,26, http://www.gao.gov/new.items/d09151.pdf (accessed February 2, 2009); Lohmann, 90-92; Capoor and Ambrosi, 64-65.

27 Simon Bullock, Mike Childs and Tom Picken, "A Dangerous Distraction: Why offsetting is Failing the Climate and the People," Friends of the Earth England, Wales and Northern Ireland, June 2009, 24, http://www.foe.co.uk/resource/briefing_notes/dangerous_distraction.pdf (accessed June 29, 2009)

Questionable reductions

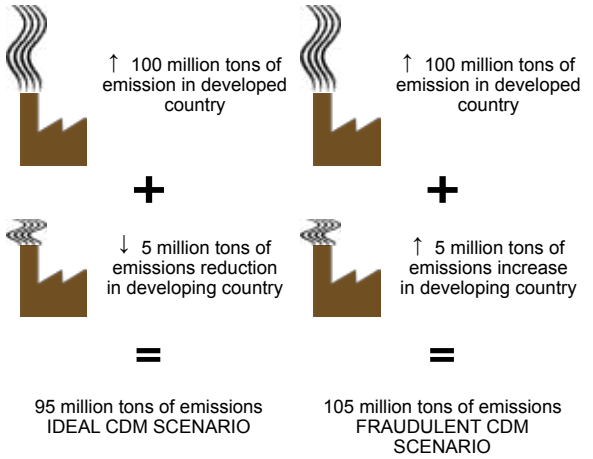
Aside from the question of justice is the question of whether the CDM achieves its claimed objectives of mitigating climate change and promoting sustainable development in the first place.

As explained above, any supposed "reductions" made by CDM projects in developing countries are "offset" by the increase in emissions that would otherwise not have been allowed in industrialized countries. In terms of net global emissions, CDM projects therefore do not lead to more reductions beyond those that should already be achieved anyway by industrialized countries on their own. But even this will only be true if the supposed reductions were real; otherwise, if some CDM projects do not actually bring about reductions, then the increases in emissions that they allow in developed countries are not actually neutralized in developing countries. The result is a net increase in global emissions.

For a reduction to be real, a project must not have happened anyway even without the CDM; in CDM-jargon, it must be "additional." Otherwise, allowing developed countries to go on emitting by buying credits from a non-additional project (it would have existed anyway even without the CDM) would lead to net emission increases. For example, if the United Kingdom buys 5 million tons worth of CERs from the Montalban project in the Philippines and the Montalban project would have been built anyway even without CDM credits because, say, the Philippine government actually needs the additional electricity it produces—then the net result is that at least 5 million more tons of emissions that the CER buyer should not have emitted ends up being added into the atmosphere. (**Figure 11: Schematic Diagram showing Impact of Fraudulent CDM Credits on Net Emissions**)

To demonstrate "additionality," CDM project developers have to prove that it is because of the additional earnings they will get from the CDM that they decided to push through with the project; i.e., without the CDM revenues, they would not even have conceived of it or they would be forced to abandon it. To calculate how many tons in emissions reductions their project will bring about—and hence, how much money they will earn in credits, project developers have to choose a "baseline"—a hypothetical scenario without the project—and calculate how much emissions would have have been produced without the project in this scenario.

FIGURE 11
Schematic Diagram showing Impact of Fraudulent CDM Credits on Net Emissions



The difference between this "baseline" (without the project) and the emissions from a scenario in which the project becomes operational equals the number of credits they stand to earn. For example, a CDM project developer can claim that without their project, emissions in the Philippines will continue to be 128 million tons per year. Their project however claims that, as a result of their project, emissions will just be 100 million tons next year. The difference between what would happen without and with their project (28 million tons) equals their claimed "emissions reductions." Multiplied by the CER price per unit, this difference yields their CDM revenues. (**Figure 12: Schematic Diagram showing how CERs are calculated**)

Herein lies the problem. Establishing what would happen without a project requires predicting the future. Given the multiplicity of factors to consider,

In terms of net global emissions, CDM projects therefore do not lead to more reductions beyond those that should already be achieved anyway by industrialized countries on their own.

the complexity of interactions among these factors, the role of contingency, the question of agency (or the ability of human beings to intervene and shape their future), and the sheer unpredictability of reality, such a task is immensely difficult even for the most objective assessor.[28] Determining a "baseline" entails deciding which among various possible alternative scenarios would have happened without the project. The bottom-line figures can swing by hundreds of percentage points based on the scenario that is chosen. This choice is ultimately political rather than technical.[29] (**Figure 13: Schematic Diagram showing impact of scenario-setting on CER calculations**)

Under the CDM, however, the very people who have a stake in choosing the scenario most favorable to their project being approved—for as much credits as plausible—are also the same people who choose the "baseline." If calculating CERs depends on "deducting what you hope happens from what you guess would have happened,"[30] as one journalist has explained it, the ones doing the guessing are also the ones hoping for maximum revenue streams. Their power to decide what is and what is not possible for the future is subject only to the judgment of consultants (who are paid by these developers and who compete with each other to be hired by developers) and by what has been reported to be a "secretive" CDM authority.[31]

FIGURE 12
Schematic Diagram Showing How CERs are Calculated

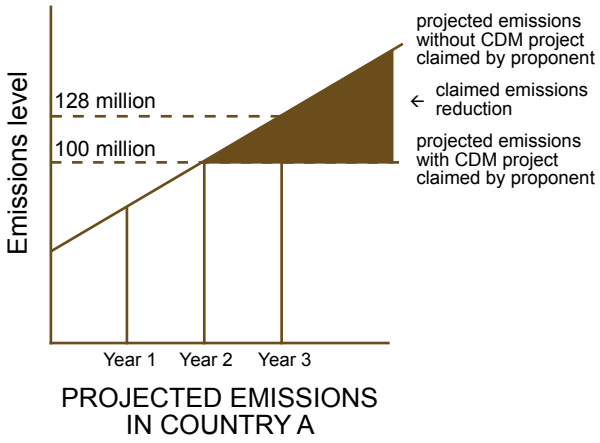
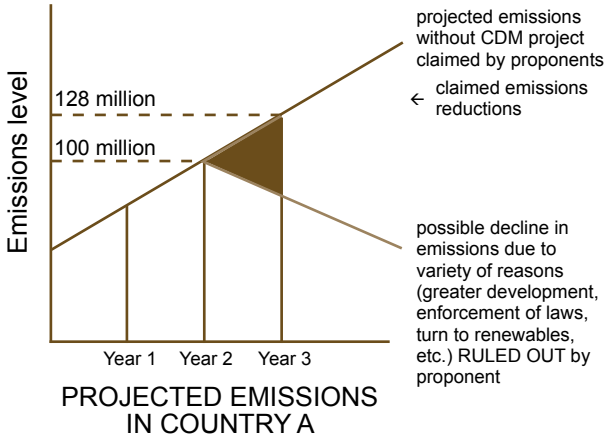


FIGURE 13
Schematic Diagram Showing Impact of Scenario-Setting on CER Calculations



28 Lohmann, 99.
29 *Ibid.*, 144.
30 Dan Welch, "A Buyer's Guide to Offsets," *Ethical Consumer* 106, May to June 2007, cited in Lohmann, "Carbon Trading – Solution or Obstacle."
31 Heidi Bachram, "Climate Fraud and Carbon Colonialism: The New Trade in Greenhouse Gases," *Capitalism Nature Socialism* 15, no. 4 (December 2004), 1-16, http://www.tni.org/archives/bachram/cns.pdf (accessed February 2, 2009); Lambert Schneider, "Is the CDM fulfilling its environmental and sustainable development objectives? An evaluation of the CDM and options for improvement," Institute for Applied Ecology, November 2007, 6;20, http://assets.panda.org/downloads/oeko_institut__2007____is_the_cdm_fulfilling_its_environmental_and_sustainable_developme.pdf (accessed February 2, 2009); Nathanial Gronewold, "Secretive UN board awards lucrative credits with few rules barring conflicts," *New York Times*, April 7, 2009, http://www.nytimes.com/cwire/2009/04/07/07climatewire-secretive-un-board-awards-lucrative-credits-10458.html (accessed April 8, 2009).

Concern about fraud raises not only ethical questions; it strikes at the root of the CDM's objectives—that is, whether it is actually able to mitigate climate change or is just another money-making scheme.

As the US Government Accountability Office (GAO) has recently concluded, "[B]ecause additionality is based on projections of what would have occurred in the absence of the CDM, which are necessarily hypothetical, it is impossible to know with certainty whether any given project is additional."[32] The ones who maintain otherwise—i.e., that it is possible not only to know but to decide what can be known—are the very parties who profit from the scheme.

Such a set-up steeped in conflicts-of-interest breeds fraud, as confirmed by a growing body of research.[33] A systematic study of 93 randomly chosen CDM projects registered from 2004 to 2007, for example, found that approximately two in every five projects are of questionable "additionality."[34] Another study of dams registered in China, which produce the most CERs, claimed that three out of every four projects had actually been constructed and were already running while their developers were telling the CDM board that their projects would not be viable without the CDM.[35] A paper from the Organization for Economic Cooperation and Development, the grouping of the world's richest countries, concluded that CDM revenues are more likely to be "icing on the cake" rather than the main reason driving projects forward, as is required.[36]

32 United States Government Accountability Office, "International Climate Change Programs: Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism," November 2008, 39, http://www.gao.gov/new.items/d09151.pdf (accessed February 2, 2009).

33 International Rivers, "The Failure of the Kyoto Protocol's Clean Development Mechanism," November 2008, 1, http://internationalrivers.org/files/CDM_factsheet_low-rez.pdf (accessed February 2, 2009).

34 Lambert Schneider, "Is the CDM fulfilling its environmental and sustainable development objectives? An evaluation of the CDM and options for improvement," Institute for Applied Ecology, November 2007, 9;44, http://assets.panda.org/downloads/oeko_institut__2007____is_the_cdm_fulfilling_its_environmental_and_sustainable_developme.pdf (accessed February 2, 2009).

35 International Rivers, 1.

36 Jane Ellis and Sami Kamel, "Overcoming Barriers to Clean Development Mechanism Projects," Organisation for Economic Cooperation and Development, International Energy Agency and UNEP Riso Center, May 2007, cited in Schneider, 41.

This has been echoed by an Asian Development Bank senior official who admitted that the CDM is "mostly functioning to provide additional cash flow to projects that are already able to move forward with its [sic] own financing"[37] —in other words, to projects that are not by definition "additional."

CDM developers and others involved in the scheme attest to this themselves. One survey which included carbon market players as respondents found 86% agreeing that carbon revenues are just "icing on the cake" and not "decisive" for investment; 71% concur that many CDM projects would have gone ahead even without CDM.[38] To prove "additionality," one stakeholder admitted that their company prepares two sets of financial documents: one for internal planning and another for CDM authorities.[39] All these have served to fan mainstream skepticism towards the CDM and carbon trading in general.[40]

Concern about fraud raise not only ethical questions; it strikes at the root of the CDM's objectives—that is, whether it is actually able to mitigate climate change or is just another money-making scheme. Tellingly, over half of those who buy and sell CDM credits themselves, according to another survey, have been consistently skeptical of the carbon market's ability to actually bring down emissions.[41] The US GAO has advised the US Congress, which is

37 Ursula Schäfer-Preuss, "Mobilizing Finance to Address Climate Change," Statement at the 4th Ministerial Meeting of the Gleneagles Dialogue on Climate Change, Clean Energy and Sustainable Development March 15, 2008, Chiba, Japan, http://www.adb.org/Documents/Speeches/2008/ms2008014.asp, Cited in Bullock, *et al.*, 15.

38 Schneider, 40.

39 United States Government Accountability Office, 48.

40 Emily Flynn Vencat, "The carbon folly," *NewsWeek*, March 12, 2007, http://www.*NewsWeek*.com/id/36517 (accessed February 2, 2009); Nick Davies, "Truth about Kyoto: Huge profits, little carbon saved," The *Guardian*, June 2, 2007, http://www.*Guardian*.co.uk/environment/2007/jun/02/india.greenpolitics (accessed February 2, 2009) Mark Gregory, "The great carbon bazaar," *BBC News*, June 4, 2008, http://news.bbc.co.uk/2/hi/business/7436263.stm (accessed February 2, 2009).

41 Point Carbon, "Carbon 2009: Emission Trading Coming Home," March 2009, 14, http://www.pointcarbon.com/polopoly_fs/1.1083376!Carbon%202009-Emission%20trading%20coming%20home.pdf (accessed June 29, 2009).

currently debating whether to adopt the scheme, that the CDM "may not be a reliable long-term approach to climate change mitigation." The goal of cutting emissions, according to the GAO, can be met more directly and more cheaply without the CDM.[42]

If "additionality" cannot be accurately and objectively proven and the supposed "reductions" are being calculated by parties with an incentive to inflate them, then fraudulent credits allow industrialized countries to emit more than they should. The higher the guess and the bigger the hopes of developers and consultants, the more gases are emitted, and the more that Kyoto Protocol caps are breached. As it is, Kyoto's current targets—as well as developed countries' proposed commitments in the coming years—are far from the amount of cuts that, according to the latest science, are needed to avert catastrophic climate change.

According to scientists, to reduce the probability of catastrophic climate change, the level of global greenhouse gas emissions must start declining by 2015, reach 1990 levels by 2020, and decline by another 20% by 2050.[43] And yet, most developed countries are actually increasing rather than decreasing their emissions, making it unlikely for them to meet their Kyoto reduction targets by the end of the first commitment period in 2012.[44] (**Table 7: Developed Countries' Actual Emissions Changes compared to Emission**

42 United States Government Accountability Office, 56.

43 Malte Meinshausen, "What does a 2°c target mean for greenhouse gas concentrations? A brief analysis based on multi-gas emission pathways and several climate sensitivity uncertainty estimates," in *Avoiding Dangerous Climate Change*. J. S. Schellnhuber, W. Cramer, N. Nakicenovic, *et al.*(Cambridge: Cambridge University Press, 2006), cited in "Two Degrees, One Chance: The urgent need to curb global warming," Tearfund, Christian Aid, Practical Action and *Oxfam Briefing Paper*, 2007, http://vsa.vassar.edu/~operationdonation/2_Degrees_One_Chance.pdf (accessed June 29, 2009).

44 Over-all reductions may be observed in the period 1990-2004 but most of these reductions can be accounted for by the economic collapse of the former Eastern bloc countries in the early '90s. [United Nations Framework Convention on Climate Change, "Changes in GHG emissions from 1990 to 2004 for Annex I Parties," http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/ghg_table_06.pdf (accessed June 29, 2009)].

TABLE 7
Developed Countries' Actual Emissions Changes compared to Emission Reduction Targets under the Kyoto Protocol

Developed Country	Target Reductions	Actual change in emissions (%) *
Austria	-8	12.4
Belgium	-8	0.3
Bulgaria	-8	5.1
Canada	-6	4.6
Czech Republic	-8	-1.4
Denmark	-8	0.1
Estonia	-8	8.4
European Community	-8	2.4
Finland	-8	16.4
France	-8	0.2
Germany	-8	-0.7
Greece	-8	4.5
Hungary	-6	2.5
Iceland	10	-12.2
Ireland	-8	0.4
Italy	-8	5.0
Japan	-6	0.7
Latvia	-8	8.2
Liechtenstein	-8	6.0
Lithuania	-8	-3.1
Luxembourg	-8	31.3
Monaco	-8	-11.0
Netherlands	-8	1.7
New Zealand	0	6.8
Norway	1	2.7
Poland	-6	0.5
Portugal	-8	2.9
Romania	-8	17.3
Russian Federation	0	4.1
Slovakia	-8	3.3
Slovenia	-8	6.6
Spain	-8	11.4
Sweden	-8	2.1
Switzerland	-8	2.6
Ukraine	0	4.6
United Kingdom	-8	-1.0
All developed country signatories to Kyoto Protocol	-5	2.9

* in the period 2000-2004

Source: United Nations Framework Convention on Climate Change, "Changes in GHG emissions from 1990 to 2004 for Annex I Parties," http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/ghg_table_06.pdf (accessed June 29, 2009).

With developed countries planning to rely even more than before on credits from the CDM to meet their reduction obligations, the CDM's lack of integrity can be decisive in terms of the world's capacity to prevent climate change.

Reduction Targets under the Kyoto Protocol)
And with developed countries planning to rely even more than before on credits from the CDM to meet their reduction obligations, the CDM's lack of integrity can be decisive in terms of the world's capacity to prevent climate change.[45]

At the same time, since more counterfeit credits increase supply and therefore lower the price of all credits in the market, companies that face two options—to just buy cheap credits and go on with "business-as-usual" or to invest in technologies that are relatively more expensive in the short-term (compared to credits) but are more sustainable in the long-term—will be less likely to choose the latter. Even in developing countries, the CDM puts other options at a disadvantage: "end-of-pipe" efficiency improvements cost relatively less but they could earn as much or more CDM revenues as renewable technologies that actually reduce fossil-fuel dependence in the long-term. In many documented cases, the CDM itself has been rewarding companies that contribute more to climate change, providing them revenue streams that allow them to expand their fossil-fuel intensive or extractive operations.

Thus, instead of promoting the transition to renewable technologies, the CDM may be locking-in fossil-fuel intensive technologies, making it even more difficult for countries to undertake the necessary emissions reductions in the future.[46]

45 The European Union has indicated that it may target a 20% reduction below 1990 levels by 2020 – but with half of it achieved by paying other countries to do the "reduction" through offsetting mechanisms such as the CDM. Japan has announced that it will reduce emissions by only 8% below 1990 level by 2020. The US has no official target yet but a climate bill, if adopted, could put that target at 4% below 1990 levels, experts say. [Bullock, *et al.*, 4]; Martin Khor, "Climate Talks Facing Crisis," *The Star (Malaysia)*, June 15, 2009, http://thestar.com.my/news/story.asp?file=/2009/6/15/focus/4118344&sec=focus (accessed June 29, 2009); Capoor and Ambrosi, 9.

46 International Rivers; Lohmann, 108;185.

Another race to the bottom

Not only is the CDM failing to mitigate greenhouse gas emissions, a number of studies show that it has likewise failed in its other stated objective of promoting sustainable development.[47]

One researcher reviewed close to 200 studies on the issue and concluded that the CDM "does not significantly contribute to sustainable development." In many cases, the goal of providing cheap emissions takes priority over promoting sustainable development, claims the report.[48] An evaluation of a sample of projects found that only about 1.6% of all credits come from projects likely to bring sustainable development benefits.[49] A study of CDM projects in India found that they did not help reduce poverty.[50] Globally, very few projects respond directly to the poor's needs; the few small renewable energy projects located in rural areas are more likely to benefit better-off farmers or to serve the needs of the urban population.[51]

Though developing country governments have the authority to screen CDM projects based on their potential contribution to sustainable development, these governments have effectively been set up in a "race-to-the-bottom" competition with other developing countries for any benefits they believe carbon credits may offer. If they set their criteria too high, they may lose market share as investors may simply decide to buy credits from projects in other countries instead. Rare has been the government that has actually rejected CDM projects with no or low sustainable development benefits.[52]

Since CDM projects are often set up as joint ventures between companies from developing and developed countries, the latter's companies also get a share of the projects' revenues, apart from the royalties and fees on any technology they bring, that they can repatriate back to their home countries. In some developing countries where governments seek to attract investments in renewable technologies, these joint ventures also benefit from tax breaks, tariff exemptions, or subsidies which represent foregone opportunity costs or revenues for governments. Aside from companies that invest in specific CDM projects, the scheme has also proven

47 Schneider, 10; United States Government Accountability Office, 43; Axel Michaelowa and Katharina Michaelowa, "Does Climate Policy Promote Development?", *Climatic Change* 84, (2007), 1-4.

48 Holm Olsen K., "The Clean Development Mechanism's Contribution to Sustainable Development: A Review of The Literature," *Climatic Change* 84, (2007), 1-2.

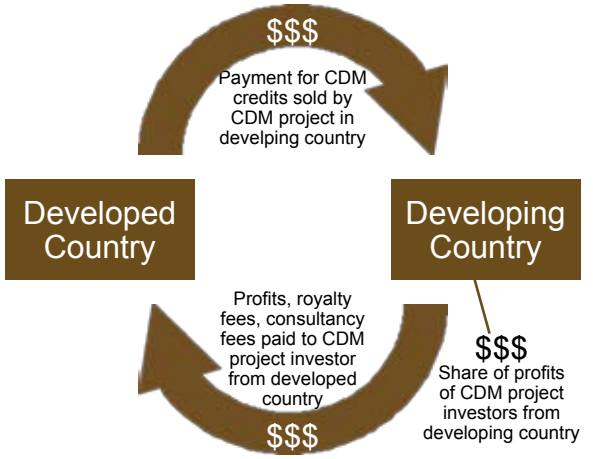
49 Christoph Sutter and Juan Carlos Parreño, "Does the current Clean Development Mechanism (CDM) deliver its sustainable development claim? An analysis of officially registered CDM projects," *Climatic Change* 84, (2007), 75-90.

50 Smita Sirohi, "CDM: Is It A "Win-Win" Strategy for Rural Poverty Alleviation in India" *Climatic Change* 84, 91-110, http://www.cleanairnet.org/caiasia/1412/articles-72507_resource_1.pdf (accessed February 2, 2009).

51 Axel Michaelowa and Katharina Michaelowa Michaelowa, "Climate Or Development: Is ODA Diverted From Its Original Purpose?," Hamburgisches Weltwirtschafts Institut Research Paper Number 2 (2005), 1, http://www.hwwi.org/uploads/tx_wilpubdb/HWWI_Research_Paper_2.pdf (accessed February 2, 2009).

52 Schneider, 47.

FIGURE 14
Schematic Diagram Showing Who Receives CDM Flows



to be a boon to consultants—based mainly in developed countries—who specialize in the schemes' increasingly complicated bureaucracy. (**Figure 14: Schematic Diagram showing who receives CDM flows**)

Thus, if each CDM credit represents a payment made by a rich country for a poor country not to use limited carbon resources so that it can use this resource for itself, as explained earlier, then part of that payment actually goes back to the rich country in the end. Developing country governments, for their part, have to bear the risks that they normally bear in attracting foreign direct investments (FDIs): shift of ownership of capital to foreigners, transfers of surplus to foreign countries, expensive patent payments and other royalties, foreign exchange risks, etc. Rather than facilitate technology transfer from rich to poor, according to analysts following the CDM's economic impact on developing countries, the scheme "abounds with opportunities for hidden private sector profit accumulation"[53] over which developing country governments or civil society have little control.

53 Yin Shao Loong and Ben Pearson, "Clean Development or Development Jeopardy," Third World Network and CDM Watch, http://www.twnside.org.sg/title/cop8a.doc (accessed June 29, 2009).

Current Philippine CDM Projects

These growing questions about the fairness and effectiveness of the CDM scheme globally are further reinforced by looking into the current CDM projects in the Philippines.

As of June 2009, 32 CDM projects have been successfully registered while another 45 are in the process of registration. (**Table 8: Registered CDM Projects from the Philippines: Nature**

TABLE 8
Registered CDM Projects from the Philippines: Nature of Activity, Claimed 'Reductions', Share of 'Reductions, and Estimated Revenues

	Name	Nature of Activity	Total 'Reductions'	'Reductions' as % of Total	Estimated Revenues in million ₱	
					Lower Bound	Upper Bound
1	Montalban Landfill Methane Recovery and Power Generation Project	Landfill gas	5,899,930	48.6%	3,427	10,470
2	Quezon City Controlled Disposal Facility Biogas Emission Reduction Project	Landfill gas	1,163,390	9.6%	676	2,065
3	First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	Sugar mill biomass	838,509	6.9%	487	1,488
4	Wastewater treatment using a Thermophilic Anaerobic Digestor at an ethanol plant in the Philippines	Ethanol plant wastewater treatment	671,272	5.5%	390	1,191
5	Hedcor Sibulan 42.5 MW Hydroelectric Power Project	Hydroelectric	666,218	5.5%	387	1,182
6	Philippine Sinter Corporation Sinter Cooler Waste Heat Recovery Power Generation Project	Waste heat recovery	617,020	5.1%	358	1,095
7	20 MW Nasulo Geothermal Project	Geothermal	524,825	4.3%	305	931
8	NorthWind Bangui Bay Project	Windpower	397,516	3.3%	231	705
9	San Carlos Renewable Energy Project	Ethanol distillery/ Sugar mill biomass	263,606	2.2%	153	468
10	Makati South Sewage Treatment Plant Upgrade with On-Site Power	Sewage wastewater treatment	201,103	1.7%	117	357
11	Biomass boiler project in the Philippines	Rice husk biomass	129,703	1.1%	75	230
12	Excel Farm Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	125,260	1.0%	73	222
13	Amigo Farm Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	57,610	0.5%	33	102
14	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2003)	Swine farm wastewater treatment	56,441	0.5%	33	100
15	Paramount Integrated Corporation Methane Recovery and Electricity Generation	Swine farm wastewater treatment	53,074	0.4%	31	94
16	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1005)	Swine farm wastewater treatment	47,453	0.4%	28	84

TABLE 8 (cont.)
Registered CDM Projects from the Philippines: Nature of Activity, Claimed 'Reductions', Share of 'Reductions, and Estimated Revenues

	Name	Nature of Activity	Total 'Reductions'	'Reductions' as % of Total	Estimated Revenues in million ₱	
					Lower Bound	Upper Bound
17	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1002)	Swine farm wastewater treatment	46,753	0.4%	27	83
18	Laguna de Bay Community Waste Management Project 1	Wastewater treatment and composting	42,406	0.3%	25	75
19	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Bundled Project (ADSW RP1001)	Swine farm wastewater treatment	40,642	0.3%	24	72
20	Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	32,010	0.3%	19	57
21	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2004)	Swine farm wastewater treatment	30,765	0.3%	18	55
22	Goldi-Lion Agricultural Development Corporation Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	27,958	0.2%	16	50
23	Joliza Farms Inc. Methane Recovery	Swine farm wastewater treatment	25,592	0.2%	15	45
24	D&C Concepcion Farms, Inc. Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	23,436	0.2%	14	42
25	Superior Hog Farms Methane Recovery	Swine farm wastewater treatment	23,422	0.2%	14	42
26	Lanatan Agro-Industrial Inc. Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	22,589	0.2%	13	40
27	Gaya Lim Farm Inc. Methane Recovery	Swine farm wastewater treatment	21,910	0.2%	13	39
28	Gold Farm Livestocks Corporation Methane Recovery and Electricity Generation	Swine farm wastewater treatment	20,503	0.2%	12	36
29	Uni-Rich Agro-Industrial Corporation Methane Recovery and Electricity Generation	Swine farm wastewater treatment	20,503	0.2%	12	36
30	Anaerobic Digestion Swine Wastewater Treatment with On-Site Power Project (ADSW RP2001)	Swine farm wastewater treatment	16,821	0.1%	10	30
31	Bondoc Realty Methane Recovery and Electricity Generation Project	Swine farm wastewater treatment	12,495	0.1%	7	22
32	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2008)	Swine farm wastewater treatment	9,905	0.1%	6	18
			12,130,640	100%	7,045	21,527

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

of Activity, Claimed 'Reductions', share of 'Reductions, and Estimated Revenues; Table 9: CDM Projects Undergoing Registration from the Philippines: Total Claimed 'Reductions'; Figure 15: Map with Location of CDM Projects) While the nature of the projects vary, 28 out of the 32 projects (accounting for over 80% of credits) involve waste—from landfills, hog manure, sewage, agricultural residues, etc. Some projects capture the methane gas that these waste products produce while others burn the materials directly to produce energy. Twenty of these are swine wastewater treatment projects that, while most numerous, account for just 6% of credits. There are three wind, geothermal, and hydropower energy projects, while the remaining one involves recovering heat to power

TABLE 9
CDM Projects Undergoing Registration from the Philippines: Total Claimed 'Reductions'

	Name	Total Claimed 'Reductions' (in tons)
1	Emission reductions through partial substitution of fossil fuel in three cement plants of Holcim Philippines Inc.	1,453,396
2	40 MW Northern Negros Geothermal Project	1,224,293
3	FR Cement Corporation Partial Replacement of Fossil Fuel in the Production of Portland Cement	945,280
4	Metro Clark Landfill Gas Capture System	582,701
5	Fuel Switch Project for Process Steam Generation Using Renewable Biomass Residue of Pancentury	521,720
6	Cebu CTRADE Biogas to Energy Project	437,140
7	Sumilao SURE Eco Energy Philippines Inc. Biogas to Energy Project	421,590
8	Swine Farm Methane Capture and Combustion/ Utilization project IDES20091	401,989
9	Pristine Environment's Organic Waste Composting Project in Vitas, Tondo, Manila	370,923
10	Binga Hydro Electrical Power Plant (BHEPP) rehabilitation project	344,022
11	Buluan 6MW Biomass Co-Generation Power Plant and Wastewater Treatment Project	328,370
12	Mariwasa Siam Ceramics Biomass Hot Air Generator and Gasifier Fuel Switch Project	327,270
13	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP2024)	326,354
14	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP3001)	272,832
15	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP3003)	255,010
16	Cabulig River Mini-Hydroelectric Power Project	226,849
17	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP3002)	225,785
18	Secondary catalytic reduction of N2O emissions at ONPI nitric acid plant in Bacong, the Philippines	206,318
19	Fil-Am Foods, Inc. Methane Recovery and Electricity Generation Project	196,273
20	Batangas CTRADE Biogas to Energy Project	136,606
21	La Suerte Rice Husk Cogeneration Project	121,695
22	Family Choice and Golden Season 2MW Rice Husk Projects	114,184
23	Republic Cement Corporation – Teresa Plant Waste Heat Recovery Project	110,390
24	San Andres Producers Cooperative Biomass Steam Generation Project	109,578
25	Laguna de Bay Community Watershed Rehabilitation Project -2	84,100
26	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1004)	84,000
27	Laguna de Bay Community Waste Management Project 2	62,307
28	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1007)	57,008
29	Laguna de Bay Community Watershed Rehabilitation Project -1	56,220
30	Tarlac Everlasting Farms, Inc. and Tarlac Sentra Farms, Inc. Methane Recovery and Electricity Generation Project	49,567

TABLE 9 (cont.)
CDM Projects Undergoing Registration from the Philippines: Total Claimed 'Reductions'

	Name	Total Claimed 'Reductions' (in tons)
31	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1006)	45,094
32	Red Dragon (I) Farm Methane Recovery and Electricity Generation Project	37,660
33	New Santo Domingo Stock Farm Methane Recovery and Electricity Generation Project	33,565
34	La Suerte Rice Husk-Fired Cogeneration Project	33,082
35	Everlasting & Sentra Farm Corporation Methane Recovery and Electricity Generation	28,602
36	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2007)	28,021
37	Lanatan Methane Recovery	27,902
38	Santo Domingo Methane Recovery	20,979
39	Red Dragon (II) Methane Recovery	20,678
40	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2006)	19,411
41	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2005)	18,753
42	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1008)	17,717
43	Red Dragon (II) E-Pig Farm Methane Recovery and Electricity Generation Project	14,021
44	Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1003)	12,614
45	Red Dragon Farm Corporation Methane Recovery and Electricity Generation	10,458
		10,422,327

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009); United Nations Environment Program Risoe Centre on Energy, Climate and Sustainable Development (URC), "CDM/JI Pipeline Overview Page," http://www.cdmpipeline.org/overview.htm#2 (accessed June 20, 2009).

a steel plant. (**Table 10: Registered CDM Project by Nature of Activity, % of Claimed Reductions and Expected Revenues**)

As much as 87% of credits will come from projects that involve the installation of an equipment or technology as part of an already existing process (i.e., the installation of digesters in swine farms, gas recovery pipes in landfills, incinerators in cement kilns, etc), while the rest are stand-alone (i.e., building new wind plants, geothermal, etc). (**See Table 12: CDM Projects Supplementing Existing Processes**)

Almost half of all the credits from registered projects will go to a single developer, the Montalban Methane Power Corporation, with the rest of the developers claiming no more than 10% of credits each. Around two-thirds of all projects get less than 1% each. (**Figure 17: CDM Projects' Share of Total Claimed Reductions**) Estimated revenues range from less than ₱10 million for the smallest project to more than ₱10 billion for the biggest project. Most of the CDM's foreign investors are based in the United Kingdom (24 projects with 62% of credits); investors from 14 other countries are involved in the rest. (**See Table 11: CDM Project Investors by Country; Figure 16: Project Investors by Country**)

An evaluation of the nature of these projects' activities and of the profile of their owners in the

TABLE 10
Registered CDM Project by Nature of Activity, % of Claimed Reductions and Expected Revenues

Name	Total 'Reductions'	'Reductions' as % of Total	Estimated Revenues in million ₱	
			Lower Bound	Upper Bound
Landfill Gas	7,063,320	58.2%	4,102	12,534
Montalban Landfill Methane Recovery and Power Generation Project	5,899,930	48.6%	3,427	10,470
Quezon City Controlled Disposal Facility Biogas Emission Reduction Project	1,163,390	9.6%	676	2,065
Sugar mill biomass	838,509	6.9%	487	1,488
First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	838,509	6.9%	487	1,488
Swine farm wastewater treatment	715,142	5.9%	415	1,269
Excel Farm Methane Recovery and Electricity Generation Project	125,260	1.0%	73	222
Amigo Farm Methane Recovery and Electricity Generation Project	57,610	0.5%	33	102
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2003)	56,441	0.5%	33	100
Paramount Integrated Corporation Methane Recovery and Electricity Generation	53,074	0.4%	31	94
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1005)	47,453	0.4%	28	84
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1002)	46,753	0.4%	27	83
Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Bundled Project (ADSW RP1001)	40,642	0.3%	24	72
Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	32,010	0.3%	19	57
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2004)	30,765	0.3%	18	55
Goldi-Lion Agricultural Development Corporation Methane Recovery and Electricity Generation Project	27,958	0.2%	16	50
Joliza Farms Inc. Methane Recovery	25,592	0.2%	15	45
D&C Concepcion Farms, Inc. Methane Recovery and Electricity Generation Project	23,436	0.2%	14	42
Superior Hog Farms Methane Recovery	23,422	0.2%	14	42
Lanatan Agro-Industrial Inc. Methane Recovery and Electricity Generation Project	22,589	0.2%	13	40
Gaya Lim Farm Inc. Methane Recovery	21,910	0.2%	13	39
Gold Farm Livestocks Corporation Methane Recovery and Electricity Generation	20,503	0.2%	12	36
Uni-Rich Agro-Industrial Corporation Methane Recovery and Electricity Generation	20,503	0.2%	12	36
Anaerobic Digestion Swine Wastewater Treatment with On-Site Power Project (ADSW RP2001)	16,821	0.1%	10	30
Bondoc Realty Methane Recovery and Electricity Generation Project	12,495	0.1%	7	22
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2008)	9,905	0.1%	6	18
Ethanol plant wastewater treatment	671,272	5.5%	390	1,191
Wastewater treatment using a Thermophilic Anaerobic Digestor at an ethanol plant	671,272	5.5%	390	1,191
Hydroelectric	666,218	5.5%	387	1,182
Hedcor Sibulan 42.5 MW Hydroelectric Power Project	666,218	5.5%	387	1,182
Waste heat recovery	617,020	5.1%	358	1,095

TABLE 10 (cont.)
Registered CDM Project by Nature of Activity, % of Claimed Reductions and Expected Revenues

Name	Total 'Reductions'	'Reductions' as % of Total	Estimated Revenues in million ₱	
			Lower Bound	Upper Bound
Philippine Sinter Corporation Sinter Cooler Waste Heat Recovery Power Generation Project	617,020	5.1%	358	1,095
Geothermal	524,825	4.3%	305	931
20 MW Nasulo Geothermal Project	524,825	4.3%	305	931
Windpower	397,516	3.3%	231	705
NorthWind Bangui Bay Project	397,516	3.3%	231	705
Ethanol distillery/ Sugar mill biomass	263,606	2.2%	153	468
San Carlos Renewable Energy Project	263,606	2.2%	153	468
Sewage wastewater treatment	201,103	1.7%	117	357
Makati South Sewage Treatment Plant Upgrade with On-Site Power	201,103	1.7%	117	357
Rice husk biomass	129,703	1.1%	75	230
Biomass boiler project in the Philippines	129,703	1.1%	75	230
Wastewater treatment and composting	42,406	0.3%	25	75
Laguna de Bay Community Waste Management Project 1	42,406	0.3%	25	75
Total	12,130,640	100%	7,045	21,527

For estimated revenues see Annex 1: Calculation of Estimated CDM Revenues from the Philippines for details. **Source:** Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

TABLE 11
CDM Project Investors by Country

Country	Number of Projects
United Kingdom of Great Britain and Northern Ireland	24
Japan	4
Switzerland	3
Netherlands	3
Italy	2
Spain	2
Finland	1
Canada	1
Sweden	1
France	1
Norway	1
Germany	1
Denmark	1
Luxembourg	1
Belgium	1

* some projects have investors from more than one country

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

context of the country's economic and political realities shows that most of the "credits" being generated will go to projects that further promote climate change and compromise sustainable development. In many cases, they will provide additional revenues to some of the largest and most politically powerful conglomerates in the country, with businesses in extractive and fossil fuel-intensive activities, and that continue to invest in "dirty" as opposed to clean technologies. Their projects claim funding to pursue objectives that could otherwise be achieved with more effective government and community action. But with government itself earning from the CDM, these actions are undermined by the CDM as well.

TABLE 12
CDM Projects Supplementing Existing Processes

	Total Claimed 'Reductions'	'Reductions' as % of Total
Projects that add on to existing processes	10,350,764	86.7%
Montalban Landfill Methane Recovery and Power Generation Project	5,899,930	49.4%
Quezon City Controlled Disposal Facility Biogas Emission Reduction Project	1,163,390	9.7%
First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	838,509	7.0%
Wastewater treatment using a Thermophilic Anaerobic Digestor at an ethanol plant	671,272	5.6%
Philippine Sinter Corporation Sinter Cooler Waste Heat Recovery Power Generation Project	617,020	5.2%
San Carlos Renewable Energy Project	263,606	2.2%
Makati South Sewage Treatment Plant Upgrade with On-Site Power	201,103	1.7%
Biomass boiler project in the Philippines	129,703	1.1%
Excel Farm Methane Recovery and Electricity Generation Project	125,260	1.0%
Amigo Farm Methane Recovery and Electricity Generation Project	57,610	0.5%
Paramount Integrated Corporation Methane Recovery and Electricity Generation	53,074	0.4%
Laguna de Bay Community Waste Management Project1	42,406	0.4%
Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Bundled Project (ADSW RP1001)	40,642	0.3%
Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	32,010	0.3%
Goldi-Lion Agricultural Development Corporation Methane Recovery and Electricity Generation Project	27,958	0.2%
Joliza Farms Inc. Methane Recovery	25,592	0.2%
D&C Concepcion Farms, Inc. Methane Recovery and Electricity Generation Project	23,436	0.2%
Superior Hog Farms Methane Recovery	23,422	0.2%
Lanatan Agro-Industrial Inc. Methane Recovery and Electricity Generation Project	22,589	0.2%
Gaya Lim Farm Inc. Methane Recovery	21,910	0.2%
Gold Farm Livestocks Corporation Methane Recovery and Electricity Generation	20,503	0.2%
Uni-Rich Agro-Industrial Corporation Methane Recovery and Electricity Generation	20,503	0.2%
Anaerobic Digestion Swine Wastewater Treatment with On-Site Power Project (ADSW RP2001)	16,821	0.1%
Bondoc Realty Methane Recovery and Electricity Generation Project	12,495	0.1%
Stand-alone projects	1,588,559	13.3%
Hedcor Sibulan 42.5 MW Hydroelectric Power Project	666,218	5.6%
20 MW Nasulo Geothermal Project	524,825	4.4%
NorthWind Bangui Bay Project	397,516	3.3%

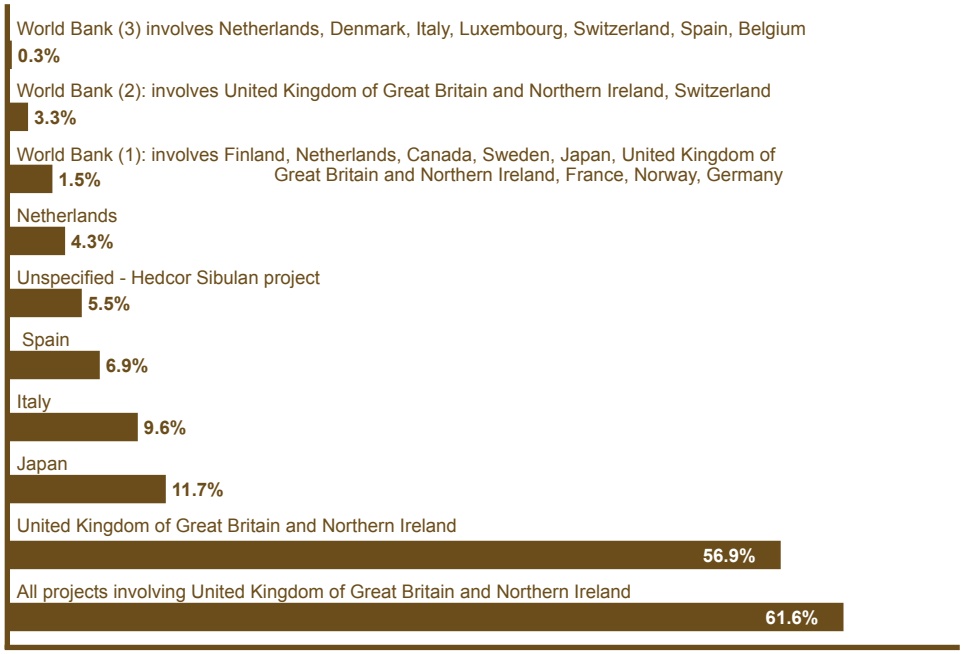
Source
Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

FIGURE 15
Map with Location of CDM Projects

Name		Location
Montalban Landfill Methane Recovery and Power Generation Project	1	Rodriguez, Rizal
Quezon City Controlled Disposal Facility Biogas Emission Reduction Project	2	Quezon City
First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	3	Talisay City, Negros Occidental
Wastewater treatment using a Thermophilic Anaerobic Digestor at an ethanol plant in the Philippines	4	Lian, Batangas
Hedcor Sibulan 42.5 MW Hydroelectric Power Project	5	Santa Cruz, Davao del Sur
Philippine Sinter Corporation Sinter Cooler Waste Heat Recovery Power Generation Project	6	Villanueva, Misamis Oriental
20 MW Nasulo Geothermal Project	7	Valencia, Negros Oriental
NorthWind Bangui Bay Project	8	Bangui, Ilocos Norte
San Carlos Renewable Energy Project	9	San Carlos City, Negros Occidental
Makati South Sewage Treatment Plant Upgrade with On-Site Power	10	Makati, Metro Manila
Biomass boiler project in the Philippines	11	Muntinlupa and Quezon City, Metro Manila
Excel Farm Methane Recovery and Electricity Generation Project	12	San Ildefonso, Bulacan
Amigo Farm Methane Recovery and Electricity Generation Project	13	Santa Maria, Bulacan
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2003)	14	Teresa, Rizal
Paramount Integrated Corporation Methane Recovery and Electricity Generation	15	Peñaranda, Nueva Ecija
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1005)	16	Tanza, Cavite
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1002)	17	Norzagaray, Bulacan
Laguna de Bay Community Waste Management Project 1	18	Cavite; Laguna; Rizal
Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Bundled Project (ADSW RP1001)	19	Antipolo, Rizal; Opol, Misamis Oriental
Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	20	Pililla, Rizal
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2004)	21	Tarlac City, Tarlac
Goldi-Lion Agricultural Development Corporation Methane Recovery and Electricity Generation Project	22	Pura, Tarlac
Joliza Farms Inc. Methane Recovery	23	Santa Maria, Bulacan
D&C Concepcion Farms, Inc. Methane Recovery and Electricity Generation Project	24	Opol, Misamis Oriental
Superior Hog Farms Methane Recovery	25	Tarlac City, Tarlac
Lanatan Agro-Industrial Inc. Methane Recovery and Electricity Generation Project	26	Balayan, Batangas
Gaya Lim Farm Inc. Methane Recovery	27	Tarlac City, Tarlac
Gold Farm Livestocks Corporation Methane Recovery and Electricity Generation	28	Tarlac City, Tarlac
Uni-Rich Agro-Industrial Corporation Methane Recovery and Electricity Generation	29	Tarlac City, Tarlac
Anaerobic Digestion Swine Wastewater Treatment with On-Site Power Project (ADSW RP2001)	30	Teresa, Rizal
Bondoc Realty Methane Recovery and Electricity Generation Project	31	Candelaria, Quezon Province
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP2008)	32	Tarlac City, Tarlac

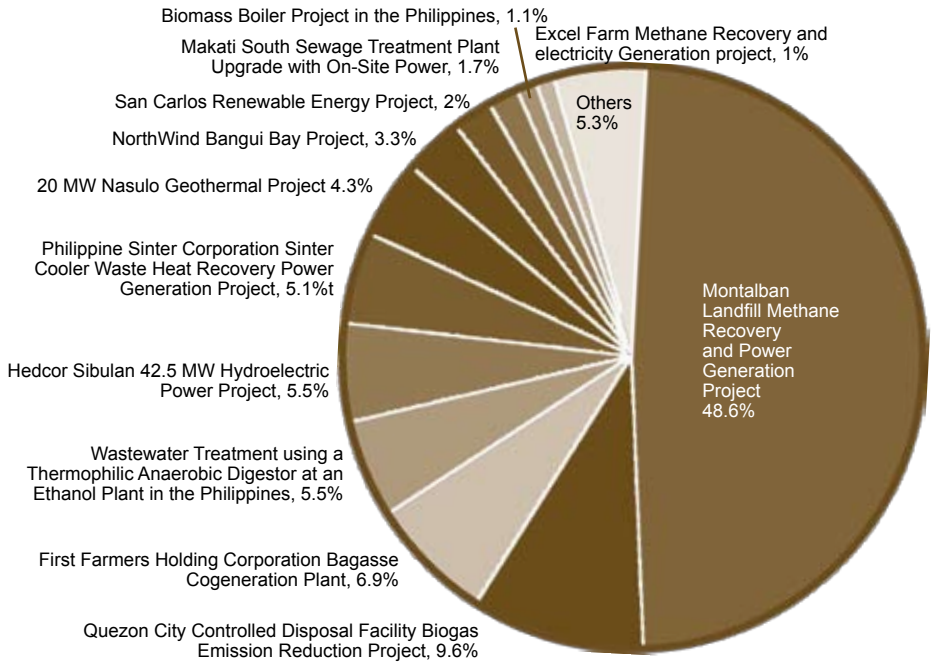
Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

FIGURE 16
Project Investors by Country



Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html [Accessed 3 February 2009]

FIGURE 17
CDM Projects' Share of Total Claimed Reductions



Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html [Accessed 3 February 2009]

Subsidizing destructive practices

Most of the credits from registered CDM projects to date will reward some of the very practices which need to be stopped if climate change is to be addressed.

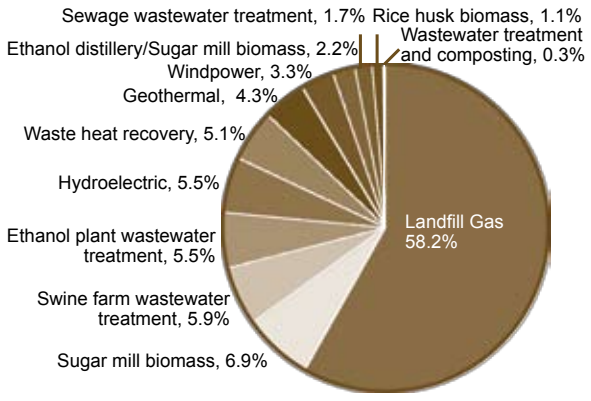
The largest and second-largest projects in terms of potential earnings to date, the Montalban project described above, as well as a similar landfill gas project in Quezon City, stand to earn nearly 60% of all expected CDM credits to date. (See **Figure 18: Landfill Gas Projects' Share of Credits**) With a similar project in Clark awaiting registration and with Montalban's developer planning to pursue six other landfill gas projects, even more CDM credits could be generated from this type of project in the future.[1]

All three—Montalban, Quezon City, and Clark—claim credits for generating electricity from methane generated in landfills. Methane is a greenhouse gas that is 72 times more powerful over a twenty-year period and 25 times more powerful over a 100-year period than carbon dioxide in its impact on the climate. But it is generated only when organic materials are disposed in large volumes, concentrated and compacted in landfills, and forced to decompose without oxygen, as is the case with the prevailing unsustainable waste management practice.

Methane would not be produced if organic waste were segregated from other kinds of waste, composted, and not disposed into landfills, as is in fact currently required under an existing law, the Solid Waste Management Act of 2001 or Republic Act (RA) 9003. (See Inset: Key Provisions of the Solid Waste Management Act) If this law were actually implemented and its objective of reducing waste were actually achieved, there would be negligible amounts of methane produced in

1 Donabelle Gatdula, "Investments in Renewable Energy projects seen to reach $200 million," *The Philippine Star*, February 20, 2009, http://www.philstar.com/Article.aspx?articleid=441773 (accessed June 29, 2009); PNA, "Meralco Eyes Malabon, Sta. Rosa Renewable Energy Projects," *Balita.ph*, April 26, 2009, http://Balita.ph/2009/04/28/meralco-eyes-malabon-sta-rosa-renewable-energy-projects/ (accessed June 29, 2009).

FIGURE 18
Landfill Gas Projects' Share of Credits



Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html [Accessed 3 February 2009]

Key Provisions of the Ecological Solid Waste Management Act

- mandatory segregation of solid waste at source
- recycling and recovery of at least 25% of "waste"
- development of markets for recyclables and compost
- conversion of open dumps into "controlled dumps" by 2004
- conversion of all "controlled dumps" into "sanitary landfills" by 2006
- establishment of National Solid Waste Management Commission

Source: An Act Providing for an Ecological Solid Waste Management Program, Creating the Necessary Institutional Mechanisms and Incentives, Declaring Certain Acts Prohibited and Providing Penalties, Appropriating Funds Therefor, and for Other Purposes, Republic Act No. 9003, January 26, 2001.

The landfill gas projects depend on—and will be rewarded by the CDM for—the perpetuation of an unsustainable waste disposal practice that actually contributes more to greenhouse gas emissions, destroys the environment and negatively affects public health.

Most of the credits from registered CDM projects to date will reward some of the very practices which need to be stopped if climate change is to be addressed.

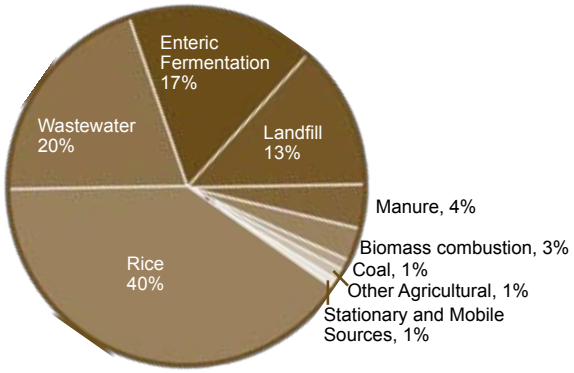
landfills—and much less need for landfills in the first place.

For the landfill gas projects to produce electricity and become viable, however, organic waste needs to be thrown into landfills and landfills must remain open. In fact, because they require a minimum amount of trash to be viable, these projects need a guarantee that they will receive the required amount of waste.[2] As the Clark landfill project explains, "[A]ssured waste supply is critical for substantiating a developer's business decision to invest in a methane capture or landfill gas-to-energy project as it provides the raw material required to recover capital investment."[3]

But for this to be guaranteed, the law must remain unenforced and its objectives need to remain unmet. In other words, the landfill gas projects depend on—and will be rewarded by the CDM for—the perpetuation of an unsustainable waste disposal practice that actually contributes more to greenhouse gas emissions and, as will be discussed below, destroys the environment and negatively affects public health.

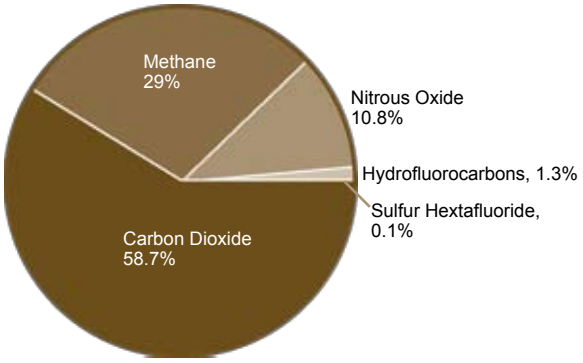
Landfills currently account for around 4% of total greenhouse gas emissions in the Philippines.[4] (**Figure 19: Estimated Anthropogenic Methane**

FIGURE 19
Estimated Anthropogenic Methane Emissions from the Philippines, By Source



Source: United States Environmental Protection Agency (US EPA), "Global Anthropogenic Non-CO_2 Greenhouse Gas Emissions: 1990-2020," June 2006, http://www.epa.gov/climatechange/economics/downloads/GlobalAnthroEmissionsReport.pdf [Accessed 29 June 2009]

FIGURE 20
2005 Greenhouse Gas Emissions in the Philippines by Gas



*Excludes land use

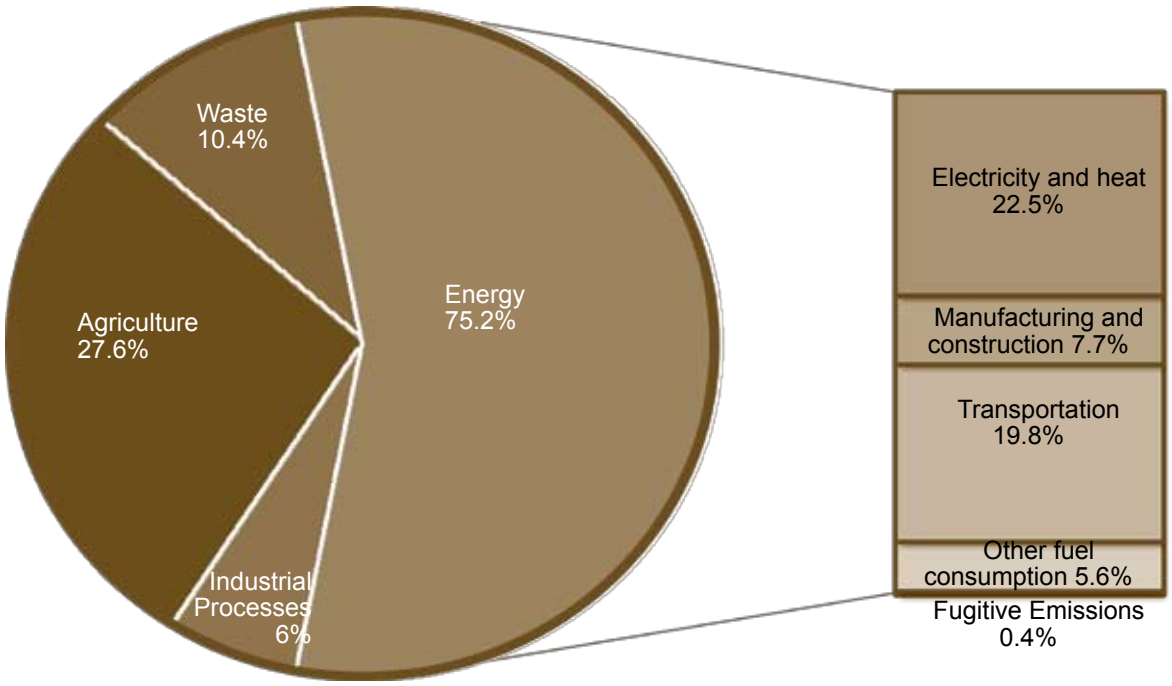
Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ [Accessed 29 June 2009]

2 According to Joy Gonzales of the Quezon City landfill gas project developers, landfill gas equipment requires over 1000 tons of garbage per day to be viable [Anna Mae Tuazon, "Clean Development Mechanism: New Challenges for the Philippines," Asian Institute of Management Policy Center, June 2008, 18, http://www.policy.aim.edu/.../CDM_New_Challenges_(June-2008).pdf (accessed June 29, 2009)].

3 Metro Clark Landfill Gas Capture System, "Project Design Document," 24, http://www.dnv.com/focus/climate_change/Upload/PROJECT DESIGN DOCUMENT%20METRO%20CLARK%20FINAL%20as%20sent%20for%20VALIDATION%20NOVEMBER%2014%202007%20revised%2012%2021%2007%20tk.pdf (accessed June 29, 2009).

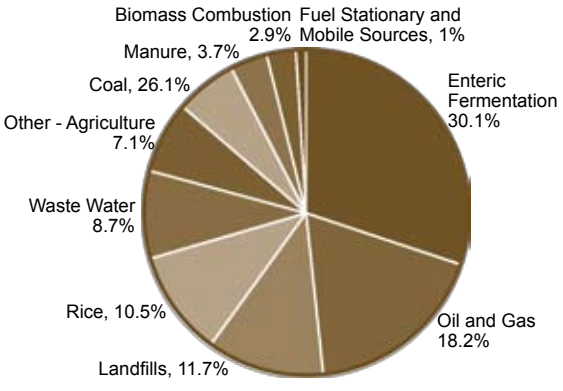
4 Landfills currently account for 13% of all methane emissions in the country [United States Environmental Protection Agency (US EPA), "Global Anthropogenic Non-CO_2 Greenhouse Gas Emissions: 1990-2020," June 2006, http://www.epa.gov/climatechange/economics/downloads/GlobalAnthroEmissionsReport.pdf (accessed June 29, 2009)]; Methane emissions account for 29% of all greenhouse gas emissions in the country [World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*].

FIGURE 21
2005 Greenhouse Gas Emissions in the Philippines by Sector



Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ [Accessed 29 June 2009]

FIGURE 22
2005 World Anthropogenic Methane Emissions by Source



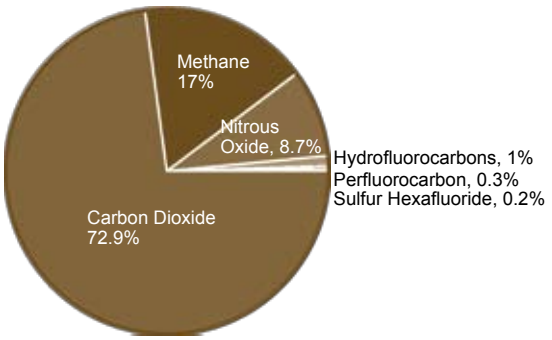
Source: United States Environmental Protection Agency (US EPA), "Global Anthropogenic Non-CO_2 Greenhouse Gas Emissions: 1990-2020," June 2006, http://www.epa.gov/climatechange/economics/downloads/GlobalAnthroEmissionsReport.pdf [Accessed 29 June 2009]

Emissions from the Philippines, By Source; **Figure 20: 2005 Greenhouse Gas Emissions in the Philippines by Gas**) As a sector, waste accounts for at least 10.4% of all greenhouse gas emissions in the country—more than from the manufacturing and construction sector—and this is likely to be an underestimate because this does not include all the emissions from having to replace the products that were disposed.[5] (See **Figure 21: Greenhouse Gas Emissions in the Philippines by Sector**) Globally, landfills contribute around 12% to global methane emissions; methane, in turn, constituted 17% of all greenhouse gas emissions in 2005.[6] (**Figure 22: 2005 World Anthropogenic**

5 *Ibid.*; Global Alliance for Incinerator Alternatives (GAIA), "Zero Waste for Zero Warming: GAIA's Statement of Concern on Waste and Climate Change," December 2008, http://no-burn.org/downloads/climatestatement.pdf (accessed February 2, 2009).

6 World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0.*

FIGURE 23
2005 World Greenhouse Gas Emissions by Gas



*Excludes land use

Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ [Accessed 29 June 2009]

Methane Emissions by Source; Figure 23: 2005 World Greenhouse Gas Emissions by Gas)

To reduce this, waste reduction and proper solid waste management can contribute more than the CDM-supported landfill gas projects. By preventing organic waste from accumulating in landfills, segregation and composting reduces methane emissions. By reducing the need for more newly manufactured products to replace what were thrown away, waste minimization and recycling lessens the need for energy-intensive extraction, manufacturing, and transport.[7]

A growing body of research supports this. Reviewing various waste disposal options, a comprehensive study for the European Commission found that segregation, recycling and composting can cut greenhouse gas emissions the most compared to all other waste options. The main reason why this is the case, according to the study, is precisely because these actions avoid the methane emissions that would otherwise have been generated through landfills. Landfill gas management is described as an "end-of-pipe" solution that "reduces only one of the impacts of landfilling biodegradable waste without tackling the root cause."[8]

Another study found that, among alternative waste options, composting proved to be the most cost-effective way to reduce greenhouse gas emissions. In fact, proper waste treatment was found to be cheaper—and also faster—than other conventional emission reduction options such as switching from coal to natural gas in power plants.[9] One estimate found that sustainable waste management would be equivalent in impact to taking one in every two cars off the road or closing down one of every five coal power plants in the US.[10] According to another study, avoiding one ton of carbon emissions through recycling costs 90% and 30% less than wind power and energy respectively.[11] Comparing the climate change benefits of preventing organic waste from being disposed into landfills with landfill gas projects, one study found that the former is at least 25 times more effective than the latter.[12]

7 As the Intergovernmental Panel on Climate Change (IPCC) explains, "Manufacturing products from recycled materials is less energy intensive and associated with fewer greenhouse gas emissions than making products from virgin materials… Overall energy consumption is lower for recycled paper than for virgin paper… Compost usage can reduce fertilizer requirements by at least 20%." [Bert Metz, Ogunlade Davidson, Rob Swart, Jiahua Pan, eds., *Climate Change 2001: Mitigation: Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2001), 230.] A subsequent report pointed out that "Waste management policies can reduce industrial sector greenhouse gas emissions by reducing energy use through the re-use of products (e.g., of refillable bottles) and the use of recycled materials in industrial production processes. Recycled materials significantly reduce the specific energy consumption of the production of paper, glass, steel, aluminum and magnesium." [Metz, *et al.*, 483.]

8 Alison Smith, Keith Brown, Steve Ogilvie, Kathryn Rushton, Judith Bates, "Waste management options and climate change: final report to the European Commission, DG Environment," July 2001, iii, http://ec.europa.eu/environment/waste/studies/pdf/climate_change.pdf (accessed February 2, 2009).

9 Ofira Ayalon, Yoram Avnimelech And Mordechai Shechter, "Solid Waste Treatment As A High-Priority And Low-Cost Alternative For Greenhouse Gas Mitigation," *Environmental Management* 27, no. 5 (2001), 697-704.

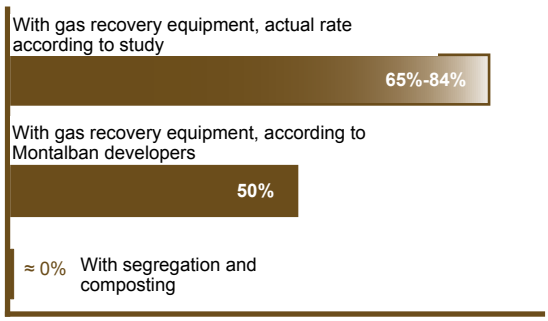
10 Brenda Platt, David Ciplet, Kate M. Bailey and Eric Lombardi, "Stop Trashing the Climate," Institute For Local Self Reliance, Eco-Cycle, Global Alliance for Incinerator Alternatives, 2008, Es-2, http://www.stoptrashingtheclimate.org/fullreport_stoptrashingtheclimate.pdf (accessed February 2, 2009); Neil Tangri, Automobile figure calculated using EPA clean energy calculator, Global Alliance for Incinerator Alternatives.

11 Lisa A. Skumatz, "Comparing carbon footprint effects and costs from diversion vs. energy programs," Presentation at California Resource Recovery Association, August 2008.

12 Peter Anderson, "Comments to the California Air Resources Board on landfills' responsibility for anthropogenic greenhouse gases and the appropriate response to those facts," 2007, 5, http://www.competitivewaste.org/publications.htm, cited in Platt, *et al.*, 34.

The energy produced by landfill gas—which could be considered "renewable" only if waste were considered unlimited and unavoidable—would still be far less than the energy that would have been saved had the waste been recycled instead.

FIGURE 24
Percentage of Methane Emitted in Landfills



Source: cited in Brenda Platt, David Ciplet, Kate M. Bailey and Eric Lombardi, "Stop Trashing the Climate," Institute For Local Self Reliance, Eco-Cycle, Global Alliance for Incinerator Alternatives, 2008, p.29,34 http://www.stoptrashingtheclimate.org/fullreport_stoptrashingtheclimate.pdf [Accessed 2 February 2009]

The CDM landfill gas projects entail capturing and flaring methane as well, with Montalban claiming to be able to capture as much as 50% of emissions. But, in fact, the installation of "gas capture and recovery systems" is actually already one of the minimum requirements before "sanitary landfills," such as the one in Montalban, are allowed to operate, according to law. It should have been installed even without the CDM. In any case, according to estimates of the capture rates of existing projects, landfill gas technology actually removes only between 16% to 35% of methane—much less than is claimed by Montalban's proponents and much less than would not have been produced through segregation in the first place.[13] (See **Figure 24: Percentage of Methane Emitted with Segregation, with Montalban's claimed capture rate, and with actual capture rates**)

In the end, the energy produced by landfill gas—which could be considered "renewable" only if waste were considered unlimited and unavoidable—would still be far less than the energy that would have been saved had the waste been recycled instead.[14] This energy would, in turn, be used to power more greenhouse gas emitting activities, raising questions about net emissions down the line. As it is, one study found that the CDM methodology applicable to landfill gases overestimates the amount reduced due to faulty calculations.[15]

13 *Ibid.*, 29; Nickolas J. Themelis and Priscill A. Ulloa, "Methane Generation in Landfills," *Renewable Energy* 32 (2007), 1243-1257;1250, cited in Platt, *et al.*, 34.

14 Tellus Institute, "Assesment of Materials Management Options for the Massachusetts Solid Waste Master Plan Review," submitted to Massachusetts Department of Environmental Protection, December 2008, 18, http://www.mass.gov/dep/recycle/priorities/tellusmmr.pdf (accessed June 29, 2009).

15 Kenneth Mollersten and Stefan Gronkvist, "All CO_2 is equal in the atmosphere - a comment on CDM GHG accounting standards for methane recovery and oxidation projects," *Energy Policy* 35 (2007), 3675-3680.

In terms of economic benefits, proper waste management through recycling can also contribute to generating more employment than landfilling. According to one estimate in developed countries, sorting recyclable materials alone creates 10 times more jobs per ton of waste than landfills and incinerators; producing new products from recycled materials creates as many as 60 times more workers than do landfills.[16] In developing countries, where the informal sector is bigger, it has been estimated that up to 2% of the population survives by recovering materials from waste.[17] This translates to around 1.8 million people in the Philippines—a number that could be increased if recycling efforts were intensified.

Beyond economic and climate benefits, not throwing organic waste and recyclable materials into landfills also significantly lessens the need for landfilling—itself a dirty and polluting practice. As is evident in Montalban, landfills degrade the environment, destroy vegetation, and threaten the health of people from surrounding communities. A verdant hillside had to be bulldozed over and cleared of vegetation in order to make way for the dump. Once operational, landfills produce dangerous gases and contaminants from various chemicals that mix and drift for considerable distances, increasing the risk of certain types of cancer, lung problems, central nervous system damage, birth defects and other health problems. Even the most modern landfills will excrete leachate, the liquid concentrate generated from garbage which seeps through soil, pollutes water sources, suffocates aquatic life, and spreads diseases.[18]

The Montalban landfill, for example, is estimated to produce 63 million liters of leachate—sufficient to fill over 28 Olympic-size swimming pools—with most of it expected to end up in the Marikina river.[19]

16 Institute for Local Self-Reliance, "The Five Most Dangerous Myths About Recycling," September 1996, http://grn.com/library/5myths.htm (accessed June 29, 2009).

17 Martin Medina, "Waste Picker Cooperatives in Developing Countries," Paper presented at *Membership-Based Organisation Conference*, Ahmedabad, India, January 2005, http://www.wiego.org/ahmedabad/papers/final/Medina_MBOP.doc (accessed June 29, 2009).

18 Various sources cited in Platt, *et al.*, 29.

19 Asian Development Bank, *The Garbage Book: Solid Waste Management in Metro Manila* (Manila: Asian Development Bank, 2004), 74, http://www.adb.org/documents/books/garbage-book/garbage-book.pdf (accessed February 2, 2009).

In fact, just months after it opened, a government environmental regulatory agency, which conducted chemical analysis and bacteriological tests, had found positive indications that leachate had already contaminated the area's water sources.[20] Montalban landfill's operators were subsequently caught on video deliberately releasing leachate directly into the river.[21] Concern about these environmental and health impacts has fueled wide opposition to the landfill from local communities who resisted its opening and who have since been demanding its closure. (See **Sidebar 1: 'Perpetuating an unwelcome dump'**)

Despite the evident benefits of waste segregation and recycling and the environmental and social costs of landfills and landfill gas projects, however, the CDM stands to infuse between ₱4.4 billion to ₱13.6 billion over the next ten years to the Montalban, Quezon City, and Clark projects. If their own calculations are to be believed—and there has been growing reason to cast doubt on claims by projects that have an incentive to inflate their self-generated estimates in order to secure registration approval[22]—the CDM funds will increase the Montalban project owners' return on investment by around 500%.[23] These calculations in turn are derived from assumptions of ever increasing trash collections. The benefit for the Quezon City project is even more dramatic: from a loss of 6% without the CDM money to a positive return of 60% or an increase of

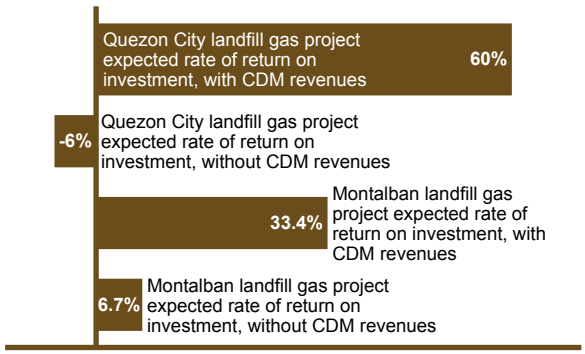
20 Laguna Lake Development Authority, "LLDA Case No. PH-02-06-194: Order," September 10, 2002; Christian V. Esguerra, "LLDA: dump poses risk to Laguna Lake," *Philippine Daily Inquirer*, September 7, 2002; "Opposition against new San Mateo landfill mounts," *Business Mirror*, February 25, 2009.

21 Mark Merueñas, "Landfill caught disposing leachate into Rizal River," *GMANews.TV*, September 18, 2008, http://www.gmanews.tv/story/121204/Landfill-caught-disposing-leachate-into-Rizal-river (accessed February 2, 2009).

22 According to Barbara Haya, "The problem with these [project additionality] indicators is that IRR [internal rate of return] numbers can easily be manipulated, every project has to overcome barriers and "common practice" has been weakly defined." [Barbara Haya, "Failed Mechanism: How the CDM is subsidizing hydro developers and harming the Kyoto Protocol," International Rivers, November 2007, 5 http://www.internationalrivers.org/files/Failed_Mechanism_3.pdf (accessed February 2, 2009)].

23 Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," 63;67, http://cdm.unfccc.int/UserManagement/FileStorage/27401SFWYM3R65LTZDXJ89CGIEVKQU (accessed February 3, 2009).

FIGURE 25
Landfill Gas Projects' Expected Project Returns with and without CDM revenues



Sources: Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," pp.63, 67, http://cdm.unfccc.int/UserManagement/FileStorage/27401SFWYM3R65LTZDXJ89CGIEVKQU; Quezon City Controlled Disposal Facility Biogas Emission Reduction Project "Project Design Document," pp.14-15, http://cdm.unfccc.int/UserManagement/FileStorage/FRGQTOHJYAMS7BBW3AEDMT0CWGEXUY [Accessed 3 February 2009]

over 1,100%. [24] (**Figure 25: Landfill Gas Projects' Expected Project Returns with and without CDM revenues**)

Thus, instead of promoting segregation and recycling, as well as reducing demand for landfills, these projects stand to earn a windfall precisely for doing the opposite. In fact, by increasing the demand for more waste, they compete with and undermine efforts at waste reduction. By providing additional income to those who earn money from landfills, they provide added incentives for keeping them open. For these projects, the less trash is segregated, the more organic waste goes to landfills, the longer landfills remain open, the more methane is produced and the more money is made—even if this may also mean more pollution, more sickness, and more emissions.

Apart from these landfill gas projects, similar problems arise with the other "end-of-pipe" waste disposal technologies employed by other CDM projects.

Like the landfill gas projects, the swine wastewater treatment projects that currently make up the largest type of CDM project in terms of number, stand to reward—rather than retard—a major cause of greenhouse gas emissions and environmental degradation. Though registered individually, these projects are being developed with various commercial hog farm owners mostly by four UK-based foreign participants in partnership with three Philippine-based companies.

The farms involved are considered medium and large commercial farms by government classification, holding between 2,000 to 30,000 pigs, or an average of 9,000 pigs per farm. (See **Table 13: Pig Population of Swine Farms with CDM Projects**) As such, these farms may be characterized as "factory farms," seeking to produce as much meat product from as many pigs as possible by taking advantage of economies of scale. To minimize costs, most of these farms dispose of manure by simply flushing them with water into open lagoons where they degrade and emit methane. What the CDM swine wastewater treatment projects intend to do is to install equipment that will treat the wastewater from this manure, capture the gas, and when viable, produce electricity mostly for their own use.

Manure doesn't have to end up degrading in lagoons, however. Deposited onto land in fields and pastures in the right amount, it can and has long been used as fertilizer to enrich the soil.[25] In this long-standing sustainable practice, pigs are housed in pens with "beddings" made of straw or hay. When soiled, the "beddings" would be removed from the pens and taken into manure heaps and composted, killing pathogens in the manure, boosting organic matter in the soil, and therefore providing the nutrients for plants that would eventually be fed to pigs, thereby creating a holistic cycle. Odor is decreased, water and electricity use is minimal, and the possibility of

24 Quezon City Controlled Disposal Facility Biogas Emission Reduction Project "Project Design Document," 14-15, http://cdm.unfccc.int/UserManagement/FileStorage/FRGQTOHJYAMS7BBW3AEDMT0CWGEXUY (accessed February 3, 2009).

25 Henning Steinfeld, Pierre Gerber, T. D. Wassenaar, Vincent Castel, Mauricio Rosales, Cees de Haan, *Livestock's Long Shadow: Environmental Issues and Options* (Rome, Italy: United Nations Food and Agriculture Organization, 2006), 97, http://www.fao.org/docrep/010/a0701e/a0701e00.HTM (accessed February 4, 2009).

TABLE 13
Pig population of swine farms with CDM projects

	Name of Project	Claimed 'Reductions' as % Total	Pig Population
1	Excel Farm Methane Recovery and Electricity Generation Project	1.0%	29,784
2	Amigo Farm Methane Recovery and Electricity Generation Project	0.5%	11,733
3	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2003)	0.5%	14,089
4	Paramount Integrated Corporation Methane Recovery and Electricity Generation *	0.4%	20,000
5	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1005)	0.4%	14,823
6	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1002)	0.4%	7,664
7	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1001)	0.3%	11,261
8	Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	0.3%	6,625
9	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2004)	0.3%	9,310
10	Goldi-Lion Agricultural Development Corporation Methane Recovery and Electricity Generation Project	0.2%	9,365
11	Joliza Farms Inc. Methane Recovery *	0.2%	10,000
12	D&C Concepcion Farms, Inc. Methane Recovery and Electricity Generation Project	0.2%	7,362
13	Superior Hog Farms Methane Recovery	0.2%	7,448
14	Lanatan Agro-Industrial Inc. Methane Recovery and Electricity Generation Project	0.2%	7,937
15	Gaya Lim Farm Inc. Methane Recovery	0.2%	5,251
16	Gold Farm Livestocks Corporation Methane Recovery and Electricity Generation *	0.2%	2,000
17	Uni-Rich Agro-Industrial Corporation Methane Recovery and Electricity Generation *	0.2%	8,000
18	Anaerobic Digestion Swine Wastewater Treatment with On-Site Power Project (ADSW RP2001)	0.1%	4,702
19	Bondoc Realty Methane Recovery and Electricity Generation Project	0.1%	4,009
20	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2008)	0.1%	2,419

* maximum number of heads, as per farm's Environmental Compliance Certificate issued by DENR; not actual population

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

The swine wastewater treatment projects that currently make up the largest type of CDM project in terms of number, stand to reward—rather than retard—a major cause of greenhouse gas emissions and environmental degradation.

SIDEBAR 1

THE CDM'S SUPPORT FOR MONTALBAN'S LANDFILL

Perpetuating an unwelcome dump

From its gate on the peak of a hill, the Montalban landfill's speckled mound of trash contrasts with the deep green of the Sierra Madre mountains fading into the horizon. Local residents in the landfill's town of Rodriguez in the province of Rizal have been campaigning to close these gates for years. But new revenues from the Clean Development Mechanism (CDM) for a power plant that depends on the landfill's trash may have made their task even more difficult.

In 2001, Metro Manila, the Philippines' capital and most populous region, faced a growing garbage crisis. Dumps which used to receive its trash were overflowing and had to be closed. For a time, no other local government unit was willing to step forward and offer its land to accept the rapidly accumulating garbage. Metro Manila's cities either had no space or their officials feared opposition from residents who may not want to live with the stench and pollution caused by dumps. Only Mayor Pedro Cuerpo of Rodriguez, which borders Metro Manila, stepped up and offered his town.

His offer was not, however, backed entirely by his constituents. Aware of the landfill's potential health and environmental hazards, local residents banded together to establish a people's organization called the Mamamayan ng Montalban Ayaw sa Basura (MMAB) to oppose Cuerpo's decision. In partnership with the local Church, and supported by other organizations, the MMAB conducted an information campaign and organized protest rallies that brought as many as 6,000 to 7,000 local residents to the streets.[1] It was one of the town's largest political mobilizations in recent history.

Apart from protest actions, the MMAB also sought a legal remedy by filing a petition with the San Mateo Regional Trial Court to prevent the landfill's opening. Despite the protests and the legal challenge, however, the landfill was constructed, in the process clearing vegetation from 14 hectares of land in an area near a river that residents say is part of a watershed. This, residents pointed out, is in violation of the Solid Waste Management Act, which states that landfills must be located far from "environmentally sensitive resources such as aquifer, groundwater reservoir or watershed area."[2] To open the road leading to the landfill, fully grown trees were also cut without proper authorization, violating the Forestry Reform Code.[3] The forested area which was bulldozed is part of the larger reservation from which Metro Manila gets its water.[4]

By 2007, the landfill was receiving as much as 4,000 tons of solid waste from Metro Manila daily[5]. And, as part of an apparent competition over landfill revenue flows, an adjacent 19 hectares of land would likewise be cleared and turned into a landfill to receive even more garbage.[6]

Since the landfill's opening and expansion, local residents' initial fears about its negative impacts have gradually been confirmed. Just months after its opening, residents began complaining of skin diseases, inflammation, stomach ache, and severe diarrhoea after taking a bath in the river or drinking water from local sources. Fish started dying in large numbers.[7]

The Laguna Lake Development Authority (LLDA), an environmental regulatory agency, conducted chemical analysis and bacteriological tests on the water near the site. The results indicated that the landfill's leachate, which the landfill operators were directly discharging into the river, had already contaminated the water. The

1 Interview with Dr. Pastor Cruz, leader of Mamamayan ng Montalban Ayaw sa Basura (MMAB), June 10, 2009; PNA, "Meralco Eyes Malabon, Sta. Rosa Renewable Energy Projects."

2 Section 40 Article (e) of the law states: "The site must be located in an area where the landfill's operation will not detrimentally affect environmentally sensitive resources such as aquifer, groundwater reservoir or watershed area." An Act Providing for an Ecological Solid Waste Management Program, Creating the Necessary Institutional Mechanisms, and Incentives, Declaring Certain Acts Prohibited and Providing Penalties, Appropriating Funds Therefor, and for Other Purposes, Republic Act No. 9003, January 26, 2001.

3 Montalban Environmental Protection and Development Council, "Affidavit-Complaint" May 9, 2006.

4 Interview with Dr. Pastor Cruz.

5 "Group Faults DENR, Execs for Montalban Toxic Dump", *Pinoy Press*, September 19, 2008, http://www.pinoypress.net/2008/09/19/group-faults-denr-execs-for-montalban-toxic-dump/ (accessed July 30, 2009).

6 Non Alquitran, "Contractor to Expose P900-M Landfill Stink," *The Philippine Star*, October 15, 2007, http://www.newsflash.org/2004/02/hl/hl106418.htm (accessed May 13, 2009); "Rizal Gov't Secures Clearance to Operate Landfill," GMANews.TV, October 21, 2007, http://www.gmanews.tv/story/65361/Rizal-govt-secures-clearance-to-operate-landfill (page retrieved on May 13, 2009 (accessed May 13, 2009); "Province Junks Cuerpo's Proposal to Use Montalban Lanfill," *Sun. Star Manila*, August 7, 2008, http://www.sunstar.com.ph/static/man/2008/08/07/news/province.junks.cuerpo.s.proposal.to.use.montalban.landfill.html (accessed May 13, 2009).

7 Montalban Environmental Protection and Development Council, "Letter to Madam Secretary Elisea Gozun of the DENR," January 29, 2003; "Montalban Dumpsite is Blamed for Grave Toxic Pollution of River," *Manila Bulletin*, August 6, 2002.

LLDA consequently issued against the landfill a "Notice of Violation" threatening closure unless waste water standards were met.[8] These and other demands for environmental compliance would largely remain unheeded. In 2008, the landfill's operators would even be caught on video deliberately disposing of leachate through pipes from the landfill into the river.[9]

Through the years, local groups have continued to press for the landfill's closure. But the lucrative revenues offered by the landfill have tipped the balance against their demand. At one point, the landfill was reported to be generating at least ₱400 million a year for International Solid Waste Integrated Management Specialist (SWIMS), the private contractor running the landfill, while the Rodriguez municipal government under Mayor Cuerpo has reportedly earned at least ₱900 million since 2002.[10]

In 2008, the going rate for disposal amounted to ₱600 per metric ton; with an estimated 4,000 tons received daily, the total revenues from operating the landfill can be estimated to hit ₱880 million a year— more than twice the entire annual budget allocation of the Rodriguez local government.[11]

In October 2007, as part of what appeared to be a larger multimillion-peso squabble sparked by the landfill revenues, SWIMS accused Mayor Cuerpo of pocketing the disposal fees intended for the local government. Cuerpo would deny the charge, claiming SWIMS was only seeking to cover its tracks over the environmental violations it has committed in operating the landfill.[12] In any case, whether or not the money was lost in corruption, the magnitude of the amounts at stake has evidently made the landfill's closure a losing proposition for the local government and its officials.

The additional revenues from the CDM—estimated to be worth between ₱3.4 billion to ₱10.5 billion over ten years—further stacks the balance in favor of keeping the landfill open. The CDM project involved, a power plant which generates electricity from methane produced by decomposing waste, requires not only that the landfill remain open but that it receives even more trash. In exchange for the "continuous, uninterrupted and unhampered use" of the landfill, the project's developers agreed to give a 10% royalty fee to the Rodriguez municipal government, on top of ₱20 million in annual tax revenues supposedly due to the government.[13]

The 10% royalty fee apparently sparked a bitter struggle between the Rodriguez municipal government, the Rizal provincial government, and SWIMS. In the end, the three reached the following sharing agreement: 70% of the royalty fee goes to SWIMS, 21.25% to the Rodriguez municipal government, and 8.75% to the Rizal provincial government. [14]

The agreement does not stipulate how the 10% royalty fee is to be calculated, however. If measured as a percentage of gross revenues, the project expects to earn between ₱400 million to ₱700 million annually from electricity sales alone in the coming years.[15] From the additional carbon credits under the CDM, the project stands to earn an average of ₱0.3 billion to ₱1 billion annually. (Annex 1: Calculation of Estimated CDM Revenues from the Philippines)

Combining both and deriving the 10% royalty fee, divided by the agreed allocation agreement, yields the following annual shares: SWIMS stands to earn ₱51 million to ₱118 million; the Rodriguez municipal government, ₱16 million to ₱36 million; and the Rizal provincial government, ₱6 million to ₱15 million. (See **Table 24: Share of Royalty Fee from CDM Project**) All of this on top of the waste disposal fees from the landfill itself.

By making the landfill even more financially rewarding, the CDM is helping keep the landfill's gates open to more and more garbage. ■ (*By Denis Cote*)

8 Laguna Lake Development Authority, "LLDA Case No. PH-02-06-194: Order," September 10, 2002; Christian V. Esguerra, "LLDA: dump poses risk to Laguna Lake," *Philippine Daily Inquirer*, September 7, 2002; "Opposition against New San Mateo Landfill Mounts," *Business Mirror*, February 25, 2009.

9 Francis Earl A. Cueto and James Konstantin Galvez "Ynares Vows to Close Down Landfill," *The Manila Times*, September 20, 2008, http://www.manilatimes.net/national/2008/sep/20/yehey/prov/20080920pro2.html (accessed May 13, 2009).

10 Neal Cruz, "Too Many Lawyers Cause Too Many Problems," *Philippine Daily Inquirer*, November 2, 2007, http://opinion.inquirer.net/inquireropinion/columns/view/20071102-98275/Too_many_lawyers_cause_too_many_problems (accessed May 13, 2009); "Ombudsman orders probe of Rizal landfill mess," *The Philippine Star*, October 16, 2007; Non Alquitran, "Contractor to Expose P900-M Landfill Stink," *The Philippine Star*, October 15, 2007, http://www.newsflash.org/2004/02/hl/hl106418.htm (accessed May 13, 2009).

11 "Province Junks Cuerpo's Proposal to Use Montalban Lanfill," *Sun.Star Manila*, August 7, 2008, http://www.sunstar.com.ph/static/man/2008/08/07/news/province.junks.cuerpo.s.proposal.to.use.montalban.landfill.html (accessed May 13, 2009); "Metro residents told to segregate garbage," *Sun.Star Manila*, February 11, 2008, http://www.sunstar.com.ph/static/man/2008/02/11/news/metro.residents.told.to.segregate.garbage.html (accessed May 13, 2009).

12 Alquitran, "Contractor to Expose P900-M Landfill Stink"; "Ombudsman orders probe of Rizal landfill mess."

13 Kristine L. Alave and Margaux Ortiz, "Group seeks closure of Rodriguez landfill," *Philippine Daily Inquirer*, June 30, 2007, http://newsinfo.inquirer.net/inquirerheadlines/metro/view/20070630-74062/Group_seeks_closure_of_Rodriguez_landfill (accessed May 13, 2009).

14 "Memorandum of Agreement between the Province of Rizal, the Municipality of Rodriguez and International Solid Waste Integrated Management Specialist," June 4, 2007.

15 Computed using projected revenues from most conservative scenario chosen by the project developers multiplied by exchange rate range of US$1=₱43.02 to ₱52.58 [Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," 66.]

disease outbreaks is reduced. No significant amounts of methane are emitted.[26]

It is only in factory farms where thousands of pigs are confined together in small restricted spaces—producing more manure than can be absorbed naturally by the soil—that manure is seen as a waste rather than as a resource.[27] Because manually collecting solid manure in beddings costs more labor,[28] the common practice in such farms is to simply hose down manure with water as frequently as possible and channel the liquefied manure into lagoons or pits. Not only does this practice use up more energy and water, it is also extremely polluting.[29]

The liquefied manure contains considerable amounts of drug residues, heavy metals, and disease-causing pathogens which end up in rivers, lakes and seas, damaging the environment and affecting the health of people and animals.[30] Pathogens that would have been destroyed had the manure been composted end up getting dispersed instead. Gases escaping from the liquefied manure emit toxic substances and dangerous pollutants, including carcinogens.[31] The scale and extent of this kind of manure disposal system has contributed to making the livestock sector "probably the largest sectoral source of water pollution" and the "leading player in the reduction of biodiversity," according to the UN Food and Agriculture Organization.[32]

With regard to climate change, this liquid-based manure management option emits the most methane compared to others.[33] According to one research, the increasing adoption of these disposal processes has increased total methane emissions from manure in the last few decades.[34] Larger farms, which tend to employ this option, have been found to produce higher methane emissions than smaller operations.[35] Methane emissions from livestock manure now account for 4% of total global human-caused methane emissions, part of the 35% to 40% contribution that comes from the livestock sector alone. Considering the various processes involved in this sector—from clearing lands to raising feed, livestock accounts for 18% or nearly a fifth of all of the world's greenhouse gas emissions—more than the transportation sector.[36]

In the Philippines, livestock are estimated to produce around 10 million tons of manure per year. Emissions from manure combined with enteric fermentation, or emissions from the digestion of livestock animals, account for 21% of all methane

26 Marlene Halverson, "The Price We Pay for Corporate Hogs," Institute for Agriculture and Trade Policy, July 2000, http://www.iatp.org/hogreport/indextoc.html (accessed February 4, 2009); Janelle Hope Robbins, "Understanding Alternative Technologies For Animal Waste Treatment: A Citizen's Guide to Manure Treatment Technologies," Waterkeeper Alliance, July 2005; Animal Welfare Institute, "Biogas From Manure: How Green?," *Animal Welfare Institute Quarterly*, (Summer 2004), http://www.awionline.org/ht/d/contentdetails/id/1835/pid/2508 (accessed February 4, 2009); "Economic and Environmental Manure Solutions," Cornell University Department of Biological And Environmental Engineering, http://www.bee.cornell.edu/extension/manure/composting.htm (accessed February 4, 2009).

27 Marlene Halverson, "The Price We Pay for Corporate Hogs," Institute for Agriculture and Trade Policy, July 2000, http://www.iatp.org/hogreport/indextoc.html (accessed February 4, 2009).

28 Janelle Hope Robbins, "Understanding Alternative Technologies for Animal Waste Treatment: A Citizen's Guide to Manure Treatment Technologies," Waterkeeper Alliance, July 2005

29 Halverson.

30 *Ibid.*; Steinfeld, *et al.*, 4; Robbin Marks, "Cesspools of Shame: How factory farm lagoons and sprayfields threaten environmental and public health," Natural Resources Defense Council and the Clean Water Network, July 2001, http://www.nrdc.org/water/pollution/cesspools/cesspools.pdf (accessed February 4, 2009); Carol J. Hodne, "Concentrating on Clean Water: The Challenge of Concentrated Animal Feeding Operations," *The Iowa Policy Project*, (April 2005), http://www.farmweb.org/Articles/Concentrating%20on%20Clean%20Water.pdf (accessed February 4, 2009).

31 Animal Welfare Institute; Factory Farm.Org, "Environmental Damage," http://www.factoryfarm.org/?Page_Id=19 (accessed February 4, 2009).

32 Steinfeld, *et al.*, xxii-xxiii.

33 According to a study for the Food and Agriculture Organization, "Highest CH_4 emissions occur where animal waste is stored in lagoons, or where the waste is stored in liquid form or as a slurry." A.F. Bouwman, "Long-Term Scenarios of Livestock-Crop-Land Use Interactions in Developing Countries," *Food and Agriculture Organization of the United Nations (FAO) Land and Water Bulletin 6*, (1997), http://www.fao.org/Docrep/W5146e/w5146e0b.htm#emissions%20from%20enteric%20fermentation (accessed February 4, 2009).

34 Keith Paustian, John M. Antle, John Sheehan, Eldor A. Paul, "Agriculture's Role in Greenhouse Gas Mitigation," Pew Center on Global Change, September 2006, http://www.pewclimate.org/docUploads/Agriculture%27s%20Role%20in%20GHG%20Mitigation.pdf (accessed February 4, 2009).

35 United States Environmental Protection Agency (US EPA), "Global Anthropogenic Non-CO_2 Greenhouse Gas Emissions: 1990-2020," June 2006, 5-10, http://www.epa.gov/climatechange/economics/downloads/GlobalAnthroEmissionsReport.pdf (accessed June 29, 2009).

36 Steinfeld, *et al.*, xxi;98;112.

The Montalban methane power plant sits atop one of the foothills of the Sierra Madre range, in Rodriguez (formerly called Montalban) town in Rizal province. (By Ecowaste Coalition)

emissions—the second next largest source in the country after rice cultivation.[37] (**Figure 19: Estimated Anthropogenic Methane Emissions from the Philippines, By Source**)

The equipment to be installed by the CDM projects may reduce some of these emissions but any reductions will be minimal in proportion to the enormous streams of waste, as well as the environmental and health problems spawned by these large-scale factory farm operations.[38] Moreover, the technology does not eliminate the problem of disposal: the manure will still have to go somewhere, together with its chemicals and heavy metals.[39] The root of the problem caused by factory farming is that it generates more manure than can be sustainably borne by the land—a problem that the CDM projects do not solve.

On the contrary, because the equipment the CDM projects install require more manure from ever larger numbers of animals to generate more electricity, the CDM adds incentives to expand rather than solve these problems at their root. And in infusing more money—between ₱0.4 billion to ₱1.3 billion—to factory farms, the CDM is not only subsidizing their wasteful and environmentally degrading practices, it is also sidelining the small hog growers who undertake more sustainable practices but find it

37 United States Environmental Protection Agency (US EPA).

38 Sierra Club, "Methane Digesters and Concentrated Animal Feeding Operation (CAFO) Waste," October 26, 2004, http://www.sierraclub.org/policy/conservation/methane_digesters.pdf (accessed February 4, 2009).

39 Grace Factory Farm Project, "Methane Digestors," http://www.*Energyjustice.Net*/digesters/ (accessed February 4, 2009).

The Holcim cement plant in Bulacan hopes to earn additional revenues from the CDM by burning solid waste such as plastics and rubbers, in possible violation of the Clean Air Act ban on incineration. (By Sonny Yabao)

increasingly difficult to compete with these larger operations.

Aside from landfill gas and swine wastewater treatment projects, other CDM projects promote similarly wasteful, polluting practices. Three biomass power projects—expecting to earn around 10% of all credits so far, or around ₱0.7 billion to ₱2.2 billion in earnings—entail burning agricultural residues in order to generate energy.

A cogeneration plant in Negros will get CDM money for burning bagasse -- sugarcane residue -- to power the owners' sugar mill. In an ethanol distillery in the same province, another project earns for converting bagasse, along with wood chips and other cane trash, to electricity. To provide energy for the laundry facilities of another project in Metro Manila, a boiler will consume rice husks as fuel.

Thus, instead of composting and returning the organic content of agricultural discards back into the soil to improve fertility and the health of the soil, these projects will deliberately destroy them in exchange for energy. In the process of combustion, carbon dioxide is immediately released into the air, rather than stored in the soil, thereby adding to rather than soaking up greenhouse gas emissions.[40]

Apart from supporting landfilling, factory farming, and incineration, the CDM is also rewarding cement production, one of the world's most polluting extractive industries. The entire process of cement manufacturing—from quarrying raw materials, transporting them, and heating them at very high temperatures—makes it one of the most resource-consuming and energy-intensive industries, requiring ten times more energy than the average for other industries. Cement plants are also known to produce dangerous pollutants such as mercury and other toxic materials that have adverse effects on humans

40 Global Alliance for Incinerator Alternatives, "An Industry Blowing Smoke: 10 Reasons Why Gasification, Pyrolysis and Plasma Incineration Are Not Green Solutions," June 2009, 25, http://www.no-burn.org/downloads/BlowingSmokeReport.pdf (accessed February 9, 2009); "Factsheet: Biomass Incineration," *Energyjustice.Net*, http://www.energyjustice.net/biomass/factsheet-bm.pdf (accessed February 9, 2009).

and on nature.[41] In terms of contributing to climate change, cement is estimated to account for 4% of the world's greenhouse gas emissions—over 12 times larger than the total emissions of the Philippines.[42]

Two of the biggest contributors to these emissions, Lafarge and Holcim, are currently seeking CDM approval for projects using so-called "alternative fuels." Lafarge and Holcim, the top two largest cement companies in the world, have a combined 10% share of the world's cement market.[43] Republic Cement, an associated company of Lafarge, plans to use rice husks as fuel and convert waste heat to electricity in its Rizal plant.[44] Holcim hopes to earn credits from the combustion of agricultural residues and solid waste such as "shredded plastics, shredded rubbers, etc." to power its plants in Bulacan, Misamis Oriental and Davao.[45] In effect, these cement plans will also become de facto waste incinerators, in possible violation of the Philippine Clean Air Act of 1999, which banned incineration after a successful campaign by environmentalists.[46]

Holcim does not specify what kind of waste it plans to use, or where the "shredded plastics and rubbers" will come from, but in other countries, cement plants are known to burn tires, because their energy value is similar to that of coal, plastics and other hazardous wastes. Burning these hazardous wastes, and incorporating them into the final cement product, may expose more people to even more heavy metals and toxic substances, apart from the ones already emitted by cement plants.[47] One study found that tire burning by cement plants increased emissions of dioxins, lead, chromium and other carcinogenic substances.[48]

As with the landfill gas projects, these waste-to-energy projects undermine efforts at recycling and sustainable waste management because they create more demand for waste, treating it as a "renewable" resource that should be extracted in increasing amounts rather than reduced. And because as much as 50% of a cement plant's operating expenses goes to pay for energy, turning to waste helps in these companies' efforts to reduce their exposure to fossil fuel price increases.[49] These cost savings from

41 Groundwork, "The Cement Kiln Portal," http://www.groundwork.org.za/cement.html (accessed February 9, 2009); Earthjustice and Environmental Integrity Project, "Cementing a Toxic Legacy: How EPA has failed to control mercury pollution from cement kilns," July 2008, http://www.environmentalintegrity.org/pubs/Cementing%20a%20Toxic%20Legacy.pdf (accessed February 9, 2009).

42 Cement's total greenhouse gas emissions in 2000 was 1,588 million metric tons while the Philippines' total emission that year was 128 million metric tons. Kevin A. Baumert, Timothy Herzog, Jonathan Pershing, "Navigating the Numbers: Greenhouse Gas Data and International Climate Policy," World Resources Institute (2005), 74, http://pdf.wri.org/navigating_numbers.pdf (accessed February 9, 2009); World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*.

43 Freedonia Group, "World Cement to 2008: Market Size, Market Share, Market Leaders, Demand Forecast, Sales, Company Profiles, Market Research, Industry Trends," 2004, cited in Baumert, *et al.*, 75.

44 Republic Cement Corporation, "Project Design Document," 2, http://www.dnv.com/focus/climate_change/Upload/PDD%20FR%20Cement%20ver12-3%20_clean_.pdf (accessed February 5, 2009).

45 Holcim Philippines Inc., "Project Design Document," 2, http://www.dnv.com/focus/climate_change/Upload/CDM_PDD_final%20version%20-%20Holcim%20Philippines%20-%20April%2016,%202007.pdf (accessed February 4, 2009).

46 Section 20 of the Philippine Clean Air Act states: "Incineration, hereby defined as the burning of municipal, bio-medical and hazardous wastes, which process emits poisonous and toxic fumes, is hereby prohibited: Provided, however, That the prohibition shall not apply to traditional small-scale method of community/neighborhood sanitation ("siga"), traditional, agricultural, cultural, health and food preparation and crematoria: Provided, further. That existing incinerators dealing wth bio-medical wastes shall be phased out within (3) years after the effectivity of this Act: Provided, finally, That in the interim, such units shall be limited to the burning of pathological and infectious wastes and subject to close monitoring by the Department." Department of Health, "Republic Act 8749: Philippine Clean Air Act of 1999" http://www.doh.gov.ph/node/145/print (accessed February 4, 2009).

47 Groundwork, "The Cement Kiln Portal."

48 Mick O'Connell, "Gone To Blazes: Burning Hazardous Waste In Cement Kilns," *Friends of the Earth Briefing Sheet*, (April 1997).

49 *Ibid.*; World Business Council for Sustainable Development, "Guidelines for the selection and use of fuels and raw materials in the cement manufacturing process," December 2005, 18.

The rest of the CDM projects are "end-of-pipe" solutions that justify and derive their additional revenues from the assumption that unsustainable climate change-promoting practices such as landfilling, factory farming, incineration, and cement production will continue and cannot be addressed.

using waste—and the ₱1.5 billion to ₱4.5 billion in CDM credits that may be earned by both companies by burning it—will consequently help sustain the production of a highly carbon-intensive product.

While the CDM does support three renewable energy projects considered to be cleaner than other kinds of technology, two of these projects actually provide additional revenues to power companies that generate most of their electricity from dirty technology, thereby raising questions as to whether any net climate benefits are actually achieved down the line, as will be discussed further in the next section. They also raise deeper environmental justice issues about who bears the costs of and benefits from renewable energy; whether communities that are already marginalized economically or politically should be made to pay to meet the increasing energy needs of a dominant minority.

The Hedcor Sibulan hydropower project is being developed by the same power conglomerate that produces as much as a third of all energy produced from large dams in the country, which are known for externalizing heavy environmental and social costs, and displacing indigenous peoples and communities.[50] The other project, the Nasulo Geothermal Project, uses geothermal energy, the benefits of which have been thrown into question by its invasive impacts on indigenous peoples, forests and wildlife. It is owned by another large power conglomerate that derives most of its income from fossil fuels, and whose other CDM geothermal project threatens protected forests, as will be discussed in the next section. (See **Sidebar 3: 'The Lopezes' and the Aboitizes' Tainted Power Sources'**)

The only renewable energy project the CDM is supporting that appears to be relatively clean is the Northwind Bangui Bay project and even for this, CDM funding may not have been the deciding factor for its existence. In a public statement that casts doubt on the project's "additionality," Northwind Power Development Corporation vice president Marlon Centeno told the press, "We don't depend on our carbon credits for our viability."[51] This implies that, since they don't actually rely on the CDM to survive, they could actually remain viable even without it. This potentially violates the CDM requirement that no carbon credits be awarded to projects that would happen anyway even without the CDM, as discussed earlier.

In any case, the Northwind project accounts for only 3% of all credits so far—or nearly 30 times smaller than the all the waste-to-energy projects combined. The only existing wind power project that feeds into the national grid, Northwind produces up to 8 MW of energy—or no more than 0.07% of total dependable capacity in the country. (See **Table 8: Registered CDM Projects from the Philippines: Nature of Activity, Claimed 'Reductions,' share of 'Reductions, and Estimated Revenues**) Whether this additional capacity actually reduces emissions by displacing fossil fuel use or merely meets the increasing supply for power aspired for by the government is an issue that will be further discussed below. There are other ways of promoting renewable energy without the CDM. For just like all CDM projects, every single ton of the nearly 400,000 tons of emissions Northwind will "reduce" will still be used to increase the emissions of, say, a coal power plant or cement kiln in an industrialized country.

Northwind notwithstanding, the rest of the CDM projects are "end-of-pipe" solutions that justify and derive their additional revenues from the assumption that unsustainable climate change-promoting practices such as landfilling, factory farming, incineration, and cement production will continue and cannot be addressed. In fact, their very viability demands that these practices should go on as usual.

50 World Commission on Dams, *Dams and Development: A New Framework for Decision-making*, (London and Sterling VA: Earthscan, 2000), 110, http://www.dams.org//docs/report/wcdreport.pdf (accessed February 9, 2009).

51 Melody M. Aguiba, "It pays to be green," *Newsbreak*, August 14, 2006

Enriching 'dirty' corporations

Not only is the CDM subsidizing activities that promote climate change, it is also boosting the profits of some of the very parties most responsible for perpetrating environmental degradation.

Of the fraction of revenues that will not be repatriated back to developed countries,[1] the CDM money trail leads to the doors of some of the richest men from the richest families in the Philippines, who own some of the country's biggest and most powerful business conglomerates, with interests in "dirty" industries such as large-scale mining, fossil fuel-based power generation, oil and gas exploration, aviation, logging, agribusiness, cement, and other businesses with huge carbon footprints. (See **Figure 26: List of Philippines' Richest Individuals with CDM Projects, Expected Revenue**) Through their control over resources that are essential for winning domestic political contests, these conglomerates directly or indirectly wield enormous political power vis-à-vis the government. With the backing of or in active collusion with government authorities, some of these companies have pursued or are pursuing projects that have devastating impacts on the environment and on communities. A number have been penalized for pollution by the government's own regulatory agencies.[2] (See **Table 14: List of CDM Projects developed by or linked to companies cited for pollution violation by the government**)

The Montalban landfill gas project illustrates this tangle of politically-connected corporate interests

TABLE 14
List of CDM Projects developed by or linked to companies cited for pollution violation by the government

Name of CDM Project	Company with Pollution Violation Citation	Claimed 'Reductions' as % Total
Montalban Landfill Methane Recovery and Power Generation Project	Rio-Tuba Nickel Mining Corp. +	49.4%
First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	First Farmers Holdings Corporation	7.0%
Wastewater treatment using a Thermophilic Anaerobic Digestor at an ethanol plant in the Philippines	Absolut Distillery	5.6%
Amigo Farm Methane Recovery and Electricity Generation Project	Amigo Agro-Industrial Development Corporation *	0.5%
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1005)	Cathay Farms Development Inc	0.4%
Anaerobic digestion swine Wastewater treatment with on-site power bundled project (ADSW RP1002)	Filbrid Livestock Agricultural Corporation	0.4%
Superior Hog Farms Methane Recovery	Superior Hog Farm, Inc.	0.2%
Gaya Lim Farm Inc. Methane Recovery	Gaya Lim Farm, Inc.	0.2%
Emission reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc.	Holcim Philippines Inc.	Undergoing registration

+ subsidiary of parent company developing CDM project

* Amigo Agro-Industrial Development Corporation is not listed as directly involved in the CDM but signed an agreement with EcoSecurities to develop the project (Det Norske Veritas, "Validation Report: Amigo Farm Methane Recovery and Electricity Generation Project," 2008, http://cdm.unfccc.int/UserManagement/FileStorage/R3MSQ2EFP8UCJ5ZXDBOVNIY1H0AGK6

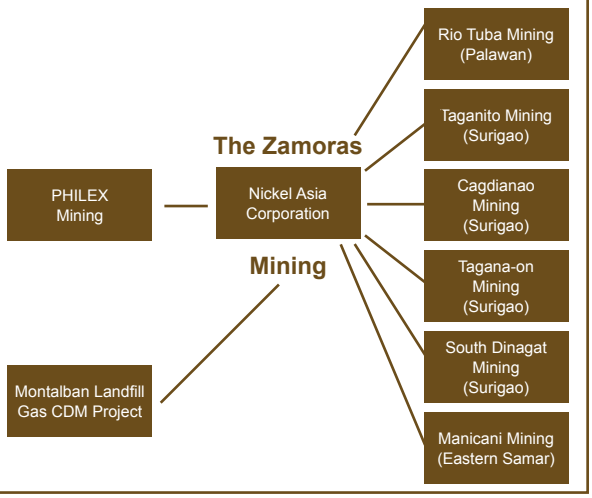
1 Part of a CDM project's revenues will go to local developers' foreign partners. (See Yin Shao Loong and Ben Pearson, "Clean Development or Development Jeopardy," Third World Network and CDM Watch, http://www.twnside.org.sg/title/cop8a.doc [accessed June 29, 2009])

2 Department of Environment and Natural Resources Environmental Management Bureau Pollution Adjudication Board (PAB), "PAB Cases," http://www.emb.gov.ph/pab/template/PAB_Cases_2008.htm (accessed June 21, 2009); Interview with Chino Agati and Dommel Bacate, staff of the Pollution Adjudication Board, August 7, 2009.

FIGURE 26
Philippines' Richest Men with CDM Projects, Expected Revenue

Individual	Rank	CDM Project	Estimated Revenues	Share in Total CDM Revenues	Businesses involved in
Luis Virata	15th	Montalban Landfill Methane Recovery and Power Generation Project	₱3.4-10.5 billion	48.6%	Mining, aviation, steel, finance, construction, tourism, etc
Salvador Zamora	32nd	Montalban Landfill Methane Recovery and Power Generation Project	₱3.4-10.5 billion	48.6%	Mining, power generation, transportation, construction, tourism, etc
Manuel Zamora	20th	Montalban Landfill Methane Recovery and Power Generation Project	₱3.4-10.5 billion	48.6%	Mining, oil and gas logistics, power generation, transportation, construction, tourism, etc
Philip T. Ang	33rd	Montalban Landfill Methane Recovery and Power Generation Project	₱3.4-10.5 billion	48.6%	Mining
Lucio Tan and family	2nd	Wastewater Treatment using a Thermophilic Anaerobic Digestor at an Ethanol Plant	₱0.4-1.2 billion	5.5%	Mining, aviation, agribusiness, construction, alcohol, cigarette, steel, tourism, education, etc
Jon Ramon Aboitiz and family	24th	Hedcor Sibulan 42.5 MW Hydroelectric Power Project	₱0.4-1.2 billion	5.5%	Power generation and distribution, heavy industries, construction, transportation, real estate, banking, etc
Enrique Aboitiz and family	35th	Hedcor Sibulan 42.5 MW Hydroelectric Power Project	₱0.4-1.2 billion	5.5%	Power generation and distribution, heavy industries, construction, transportation, real estate, banking, etc
Oscar Lopez and family	16th	20 MW Nasulo Geothermal Project	₱0.3-0.9 billion	4.3%	Power generation and distribution, construction, telecommunication, media, real estate, etc
Eugenio Lopez III and family	28th	20 MW Nasulo Geothermal Project	₱0.3-0.9 billion	4.3%	Power generation and distribution, construction, telecommunication, media, real estate, etc

FIGURE 27
The Zamoras' Corporate Interests



caught up in polluting, carbon-intensive, resource-extractive activities. (**Figure 27: Schematic Diagram of Zamoras' Corporate Interests**) The project is run by the Montalban Methane Power Corporation (MMPC), a subsidiary of Nickel Asia Corporation, the Philippines' largest nickel mining company.[3] Nickel Asia was founded and is owned by mining magnates Salvador and Manuel Zamora, of the wealthy and influential Zamora family.[4] Manuel and Salvador are respectively ranked 20th and 32nd richest men in the Philippines according to Forbes

3 Japan Engineering Consultants Company Limited, "Rodriguez Landfill Methane Recovery and Electricity Generation CDM Project Feasibility Study Report."

4 Antonio Lopez and Sangwon Suh, "The Troubleshooters," *Asiaweek*, March 19, 1999, http://cgi.cnn.com/ASIANOW/*Asiaweek*/99/0319/nat1.html (accessed February 5, 2009).

magazine.[5] The two have a combined net worth of nearly $200 million, or the equivalent of the average annual income of around 55,000 Filipino families. [6]

Salvador and Manuel's brother Ronaldo has held some of the highest posts in government for over three decades. Described as "the quintessential political operator," Ronaldo was the late dictator Ferdinand Marcos' minister of public works and highways, a member of what came to be considered as Marcos' "de facto political junta." [7] Despite his close connection to the dictator, he became a ranking official in the succeeding Aquino and Ramos administrations. Subsequently, Ronaldo, along with brother Manuel, made their way into then presidential candidate Joseph Estrada's innermost circle. They were part of the core team that fundraised for and executed the strategy that won Estrada the presidency. [8] Estrada would then appoint Ronaldo as his Executive Secretary or chief of staff. Himself a former chair and director of his family's mining firms, Ronaldo is now a member of the House of Representatives, the lower house of the Philippines' two-chamber legislative body, and is considered one of the key figures in the opposition. Manuel, who served as treasurer of Estrada's political party, was former president and present director of the Chamber of Mines of the Philippines, the mining industry lobby group.[9]

Nickel Asia has four subsidiaries that own equity or operating interests in the following mining operations across the country: Rio Tuba in southern Palawan, Taganito, Cagdianao, Tagana-an, and South Dinagat all in Surigao del Norte, and Manicani in Eastern Samar. The vice-chairman of one these subsidiaries is Philip T. Ang , the country's 33rd richest.[10] Nickel Asia also has minority interests in Coral Bay Nickel Corporation, the majority of which is owned by a Japanese consortium and run by Sumitomo Metal Mining Corporation, Japan's top nickel and second largest copper producer.[11] Together, these subsidiaries dominate the local nickel mining industry, with a combined net income of nearly ₱15 billion in 2007—over a billion pesos more than the budget of the government's own environmental regulatory agency, the Department of Environment and Natural Resources (DENR).[12]

With the CDM, the Zamoras and their CDM venture partners can expect to earn to earn a portion of the ₱0.3 billion to ₱1.7 billion a year in estimated revenues from their Montalban project — as much as 10% of all their income from mining in 2007, more than the individual incomes of their Cagdianao or Rio Tuba mining operations.[13] This provides proof that the CDM's impact on its developers' consolidated financial sheets may not be negligible.

5 Suzanne Nam, "The Philippines 40 Richest: Salvador Zamora," *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Salvador-Zamora_D8DH.html (accessed February 5, 2009).

6 Computed using average annual family income of ₱173,000 according to the Family Income and Expenditure Survey and actual average exchange rate from January to May 2009, US$1=₱47.8, according to the Bangko Sentral ng Pilipinas (National Statistics Office, "2003 and 2006 Family Income and Expenditure Survey, Final Results"; Central Bank of the Philippines, "Peso per US Dollar Rate," http://www.bsp.gov.ph/statistics/spei_new/tab25.htm (accessed June 29, 2009)

7 Eric Gutierrez, *The Ties that Bind: A Guide to Family, Business and Other Interests in the Ninth House of Representatives* (Pasig: Philippine Center for Investigative Journalism, 1994), 7-8;291.

8 Sheila S. Coronel, "The Pare Principle," *Philippine Center for Investigative Journalism iReport*, (October to December 1998) ttp://www.pcij.org/imag/PublicEye/pare.html (accessed June 30, 2009); Sheila S. Coronel, "Into the Light," *Philippine Center for Investigative Journalism iReport* V, no. 1 (January to March 1999), http://www.pcij.org/imag/PublicEye/lucio.html (accessed June 30, 2009); Ellen Tordesillas, "The Nocturnal President," *Philippine Center for Investigative Journalism iReport* V, no. 4 (October to December 1999), http://www.pcij.org/imag/PublicEye/nocturne.html (accessed June 30, 2009); Yvonne T. Chua, "The Company He Keeps," *Philippine Center for Investigative Journalism iReport* VI, no. 4 (October to December 2000), http://www.pcij.org/imag/SpecialReport/cronies.html (accessed June 30, 2009).

9 Nickel Asia Corporation, "Senior Management," http://www.nickelasia.com/management.html; Roel Landingin, "The Battle for Manila's Gateway," *Newsbreak*, September 14, 2007, http://www.newsbreak.com.ph/index.php?option=com_content&task=view&id=3712&Itemid=88889310 (accessed June 30, 2009).

10 Suzanne Nam, "The Philippines Richest 40: Philip Ang" *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_philip-ang_6a5z.html (accessed February 5, 2009).

11 Nickel Asia Corporation, "Our Operations," http://www.nickelasia.com/currentprocessing.html (accessed June 30, 2009); Reuters, "Sumitomo Mining Seeks More Control of Copper Flows," February 23, 2009, http://www.reuters.com/.../rbssminingmetalsspecialty/idust31372720090223 (accessed June 30, 2009).

12 "Top 1000 Corporations in the Philippines,' *BusinessWorld* 22, (2008), 88; Republic Act Number 9524: General Appropriations Act 2009, "Department of Environment and Natural Resources," http://www.dbm.gov.ph/GAA09/denr/denr.pdf

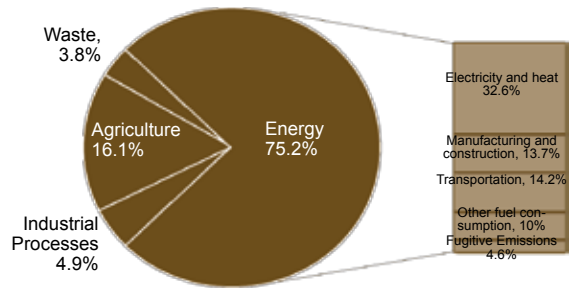
13 "Top 1000 Corporations in the Philippines, 88.

The people who stand to earn the most from the CDM in the Philippines to date are also among the largest local players in mining, an industry that has been blamed for widespread ecological damage and human rights violations locally and globally.

Apart from chairing Nickel Asia, Manuel Zamora has also been a member of the board of Philex Mining Corporation, the country's largest copper and gold mining company.[14] Philex is chaired by Manuel Pangilinan, the country's 39th richest man and chief executive of the Philippines' largest telecommunication company, PLDT.[15] Philex has mines in Negros Occidental and Zamboanga and ongoing operations in Benguet and Surigao del Norte. In Zamboanga, it has a coal mining project with about two million tons of coal reserves. It is also into oil and gas exploration.[16]

Half of Nickel Asia's shares is owned by Luis Virata, the country's 15th richest man.[17] Also known to be active politically, Virata belonged to the same inner circle as the Zamoras in bankrolling Estrada's campaign. Virata subsequently became one of Estrada's closest "troubleshooters" after he became President. A former president and chief executive of Philippine Airlines, Virata has served as chief financial adviser to Lucio Tan, the Philippines' second richest man, who will be introduced below.[18] Virata also sits on the board of another mining firm, Benguet Corporation, the Philippines' oldest mining company.[19]

FIGURE 28
2005 World Greenhouse Gas Emissions by Sector



CO_2, CH_4, N_2O, PFCs, HFCs, SF_6 (excludes land use change)

Source: World Resources Institute, Climate Analysis Indicators Tool (CAIT) Version 6.0, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ [Accessed 29 June 2009]

Thus, the people who stand to earn the most from the CDM in the Philippines to date are also among the largest local players in mining, an industry that has been blamed for widespread ecological damage and human rights violations locally and globally. As a report to the United Nations stressed, "The extractive sector is unique because no other has so enormous and intrusive a social and environmental footprint."[20] Globally, sectors linked to mining

14 Zinnia B. Dela Pena, "Philex Mining boosts capital by ₱3 billion via 25% stock dividend," *The Philippine Star*, February 12, 2009 http://www.philstar.com/article.aspx?articleid=439424 (accessed February 5, 2009); Amy Remo, "Philex Unit Reports Oil, Gas Find In Vietnam," *Philippine Daily Inquirer*, June 28, 2009, http://business.inquirer.net/money/topstories/view/20090628-212859/Philex-unit-reports-oil-gas-find-in-Vietnam (accessed February 5, 2009); Securities and Exchange Commission, "Statement of changes in beneficial ownership of securities by Manuel B. Zamora," August 1, 2008.

15 "Pangilinan is Philex Chair," *BusinessWorld*, June 25, 2009; Suzanne Nam, "The Philippines Richest 40: Manuel Pangilinan," *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Manuel-Pangilinan_6JCM.html (accessed February 5, 2009).

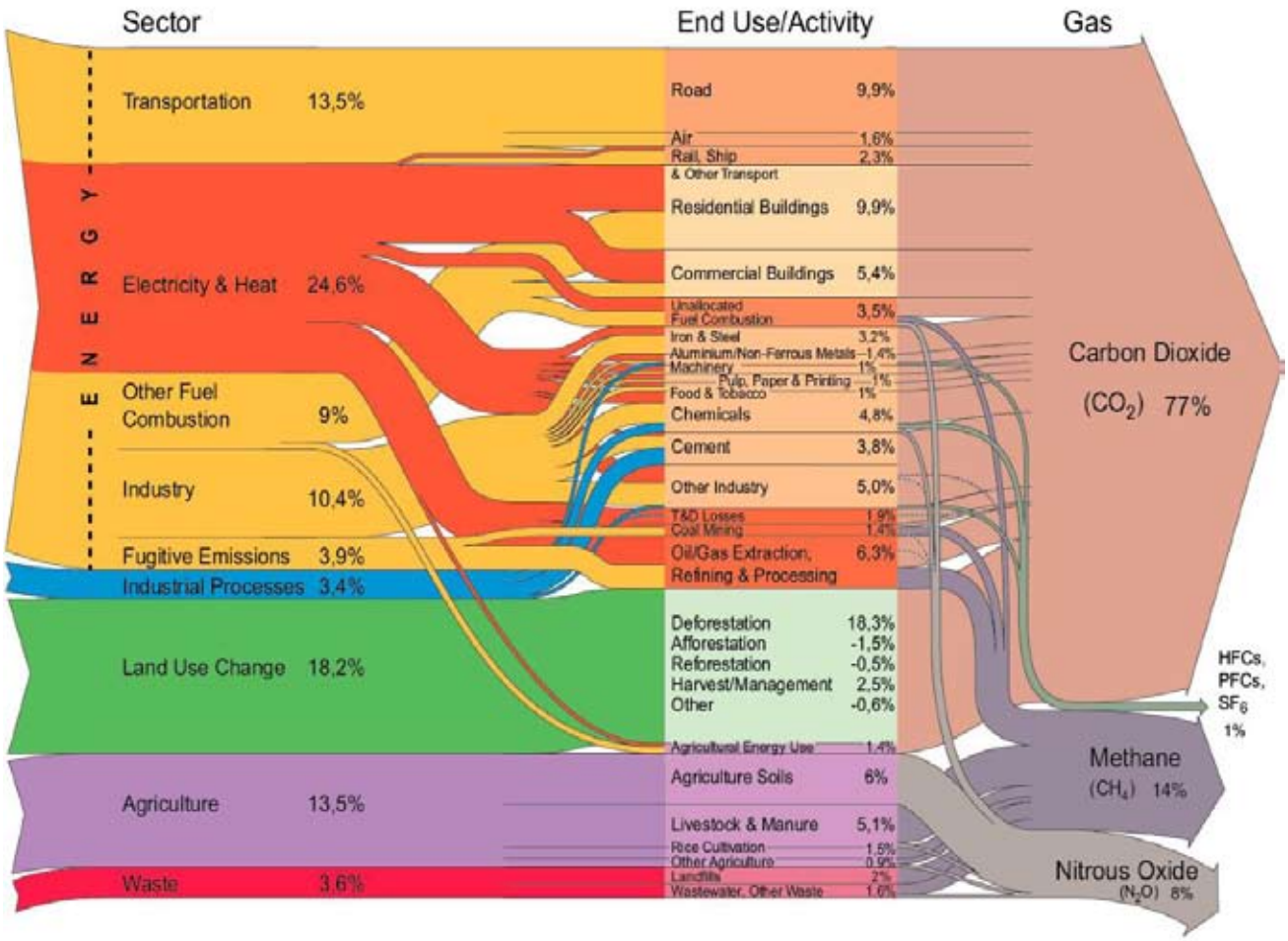
16 Philex Mining Corporation, "Corporate Profile," http://philexmining.com.ph//index.php?option=com_content&task=view&id=14&itemid=28 (accessed February 5, 2009); "Philex Mining to start coal project by December," *GMANews.TV*, June 27, 2008, http://www.gmanews.tv/story/103549/Philex-mining-to-start-coal-project-by-December (accessed February 5, 2009).

17 Suzanne Nam, "The Philippines Richest 40: Luis Virata" *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Luis-Virata_MZTH.html (accessed February 5, 2009).

18 Coronel, "Into the Light"; Antonio Lopez and Sangwon Suh, "The Troubleshooters," *Asiaweek.com*, March 19, 1999, http://cgi.cnn.com/ASIANOW/Asiaweek/99/0319/nat1.html (accessed February 5, 2009).

19 Reuters, "Benguet Corporation," http://cn.reuters.com/investing/quotes/companyofficers?symbol=BC.PS&viewId=bio (accessed June 30, 2009); "Benguet Corporation," *Businessweek*, http://investing.businessweek.com/research/stocks/people/board.asp?ric=BC.PS (accessed June 30, 2009).

20 John Ruggie, "Draft Interim Report of the Secretary-General's Special Representative on the issue of human rights and transnational corporations and business enterprises," UN Doc. E/CN.4/2006/97, February 2006.



All data is for 2000. All calculations are based on CO_2 equivalents, using 100-year global warming potentials from the IPCC (1996), based on a total global estimate of 41 755 $MtCO_2$ equivalent. Land use change includes both emissions and absorptions. Dotted lines represent flows of less than 0.1% percent of total GHG emissions.

Source: World Resources Institute, Climate Analysis Indicator Tool (CAIT), Navigating the Numbers: Greenhouse Gas Data and International Climate Policy, December 2005; Intergovernmental Panel on Climate Change, 1996 (data for 2000).

accounted for about 12% of all greenhouse gas emissions in 2000— nearly as much as from the entire transport sector. This does not include emissions from deforestation, which accounted for 18% of global emissions, of which mining is one of the contributors.[21] (**Figure 28: World Greenhouse Gas Emissions by Sector**)

In the Philippines, mining, along with logging, has been among the forces behind the country's loss of forest cover: from 17 million hectares in 1934 to just 3 million in 2003 or an 82% decline. While about 60% of the country's land area was covered with forest seventy years ago, now the forest cover spans less than 10%.[22] And with over half of ongoing and planned mining operations located in areas that are highly ecologically vulnerable and with over a third of approved mining and exploration leases located in intact forests,[23] much of the little that remains

21 This includes: Iron And Steel – 3.2%, Aluminum/Non-Ferrous Metals – 1.4%, Coal Mining – 1.4%, Oil and Gas Extraction, Refining and Processing – 6.3% [World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*]; Baumert, *et al.*

22 Germelino M. Bautista, "Economics of Philippine Mining: Rents, Price Cycles, Externalities and Uncompensated Damages," Ateneo School of Government, 34, http://gator366.hostgator.com/~ateneo/index.php?option=com_docman&task=doc_download&gid=6&Itemid=30 (accessed February 16, 2009).

23 Marta Miranda, Philip Burris, Jessie Froy Bincang, Phil Shearman, Jose Oliver Briones, Antonio La Viña and Stephen Menard, "Mining and Critical Ecosystems: Mapping The Risks," World Resources Institute, 2003, 21, http://pdf.wri.org/mining_critical_ecosystems_full.pdf (accessed February 16, 2009).

could be further lost to extractive industries such as mining.

Apart from mining's contribution to global climate change has been its devastating impact on local communities. Denuded forests, degraded mountainsides, and polluted rivers and seas have resulted in residents being driven from their lands, deprived of access to food, water, and livelihood, and exposed to harmful chemicals.[24] Over the years, a series of large and small mining disasters have inundated rivers, irrigation systems, and farmlands with toxic mining residues, killing fish, aquatic life, and crops, and threatening public health. The Marcopper mining disaster of 1996 was just the most spectacular, releasing over 1.6 million cubic meters of mine tailings in Marinduque.[25] But there have been many others.[26] More than 800 mine sites litter the countryside—contaminated but abandoned. [27] Apart from the ecological destruction, the militarization accompanying mining projects has spawned violence and human rights abuses.[28]

Because many mining operations take place in upland areas, mining's impacts have been borne disproportionately by one sector that has been more marginalized than others: indigenous peoples (IPs).[29] As much as half of all areas being claimed by mining companies for their operations are areas considered ancestral lands by indigenous peoples.[30] Numerous cases of indigenous peoples being displaced from their lands and cut off from their sources of livelihood have been documented. Under the law, no mining can commence without their consent; in practice, mining companies have used their resources and connections to skirt this requirement, buy off support, and divide indigenous communities.[31]

And yet, indigenous communities have lived off forests and watersheds sustainably for centuries; their efforts to protect the environment from mining's destruction have arguably done more to prevent climate change than the Zamoras' and others' CDM projects. Instead of being supported, more of them stand to be evicted by mining companies who earn additional revenues from the CDM.

Among the specific mining operations that have been cited for pollution violations by the government and that stand accused of destroying the environment and violating human rights of indigenous peoples and local communities are the mining operations of the Montalban landfill gas project's owners themselves. The Zamoras' mining operations are reported to have undermined laws protecting forests, deceived and displaced indigenous peoples, poisoned water sources, and cut off people from their means of subsistence. In one mine, it has been implicated in direct violence against residents opposed to its operations. (See **Sidebar 2: 'The Zamora mining operations' trail of destruction'**)

The Montalban project's links to carbon-intensive industries go beyond mining, however. The extensive corporate connections of MMPC's vice chairman Roberto F. de Ocampo, a former Department of Finance secretary and one of the country's most influential businessmen, further illustrate the breadth

24 Christian Aid and PIPlinks, "Breaking Promises, Making Profits: Mining in the Philippines," December 2004, 17-21, http://www.pcij.org/blog/wp-docs/PIPLinks_Christian_Aid_Breaking_Promises_Making_Profits.pdf (accessed February 16, 2009); Cathal Doyle, Clive Wicks and Frank Nally, "Mining in the Philippines: Concerns and Conflicts," Report of a Fact-Finding Trip to the Philippines, July-August 2006, 2, http://www.epolitix.com/fileadmin/epolitix/mpsites/MininginthePhilippines_Report.pdf (accessed February 16, 2009).

25 Ma. Eugenia Bennagen, "Estimation of Environmental Damages from Mining Pollution: The Marinduque Island mining accident," Economy and Environment Program for Southeast Asia, 1998, http://www.idrc.ca/eepsea/ev-8430-201-1-do_topic.html (accessed February 16, 2009).

26 Bautista, 26.

27 Ronnie E. Calumpita, "857 Abandoned mines pose health menace, says NGOs", *The Manila Times*, October 11, 2005.

28 William N. Holden and R. Daniel Jacobson, "Mining amid armed conflict: nonferrous metals mining in the Philippines," *The Canadian Geographer* 51, no. 4 (2007), 475-500.

29 For more on mining and indigenous peoples, see William N. Holden, "Indigenous peoples and non-ferrous metals mining in the Philippines," *The Pacific Review* 18, no. 3, (September 2005), 417-438; William Holden and Allan Ingelson, "Disconnect between the Philippine Mining Investment Policy and Indigenous Peoples Rights," *Journal of Energy and Natural Resources Law* 25, no. 4 (2007), 375-391.

30 *Mining, Minerals and Sustainable Development: The Report of the MMSD Project* (London: Earthscan 2002), 154, cited in Holden and Ingelson, 381.

31 See, among others, William N. Holden, "Civil Society Opposition to Nonferrous Metals Mining in the Philippines," *Voluntas: International Journal of Voluntary and Nonprofit Organization*, 16, no. 3 (September 2005); Holden, "Indigenous peoples and non-ferrous metals mining in the Philippines," 417-438; Christian Aid and PIPlinks, "Breaking Promises, Making Profits: Mining in the Philippines," 17-21; Doyle, Wicks and Nally.

SIDEBAR 2

The Zamora mining operations' trail of destruction

Pursuing the CDM money trail from the Montalban landfill project, into the doorsteps of the Zamoras, leads directly into bald mountaintops, silted rivers, and polluted air. It is a path marked by destruction and, in one mine site, even blood.

Manicani, Eastern Samar

Until 2001, the Zamoras' Nickel Asia Corporation operated through its subsidiary Hinatuan Mining Corporation (HMC) an open-pit saprolite ore mine in Manicani island in Eastern Samar. The mining area directly overlaps with 98% of the Guiuan Protected Landscape and Seascape, an area that is supposed to be "protected against destructive human exploitation" under the law.[1] To secure permission to operate the mine, Hinatuan resorted to various irregularities so as to prevent people opposed to the project from attending public consultations, residents reported.[2]

Despite local opposition, however, the mining operations began. An area once teeming with coral reefs, mangroves, and marine life such as tortoises, shellfish, and sea cucumbers, was quickly degraded. The volume and variety of fish caught by local fishers decreased. As mountains were bulldozed, topsoil was lost, reducing the fertility of the land on which farmers relied. The possibility of landslides as a result of deforestation increased. Forest materials such as wood and bamboo used for firewood, fish pens, or for cottage industries, became scarce. The island's springs and other sources of potable water became contaminated. Daily open pit diggings, soil hauling and shipment, and other mining activities were accompanied by a spike in cases of cough, colds, and other respiratory diseases.[3]

Though some residents supported the mining operations because of the employment opportunities it brought, local opposition gathered strength. Defying national government policy, the local provincial government of Eastern Samar passed a resolution imposing an indefinite moratorium against mining in the province.[4] Even the Catholic bishop of the province, as well as local government officials, has denounced the operation. In 2001, protesters expressing their resistance to the project formed a human barricade to block the mine. A truck believed to be owned by HMC rammed through the barricade, killing one person and seriously injuring another.[5] In March 2005, protesters were violently dispersed, according to a human rights organization.[6]

The Department of Environment and Natural Resources (DENR) subsequently ordered HMC's suspension after its own investigation showed that the mine had caused "aquatic and soil siltation." Despite this, HMC has been seeking to resume the mine's operations.[7]

Rio Tuba, Palawan

Nickel Asia's operation in Rio Tuba in Bataraza, southern Palawan has likewise been mired in controversy and community resistance. In fact, the company's environmental permit was bogged down in a long court case after environmentalists blocked its application. A local non-government organization, Environmental Legal Assistance Centre (ELAC), with the support of the international organization Environmental Law Alliance Worldwide (ELAW), claimed that the project violated the Philippine Indigenous Peoples' Rights Act (IPRA) and various environmental regulations.[8]

Because the project would encroach on natural forests that were protected from human exploitation under the law, Nickel Asia supposedly lobbied local governments and regulatory agencies to change the law instead.[9] The operation was also going to intrude into an area claimed as the ancestral domain of the Pala'wan, an indigenous people (IP) asserting their legal rights to the land. Under the law, no mining opera-

1 Miranda, et al., "Mining and Critical Ecosystems: Mapping The Risks," 21; An Act Providing for the Establishment and Management of National Integrated Protected Areas System, Defining its Scope and Coverage, and for Other Purposes, Republic Act No. 7586, June 1, 1992.

2 Citizens' Assessment of Structural Adjustment (CASA)-Philippines, "The Impact of Investment Liberalization and the Mining Act of 1995 on Indigenous Peoples, Upland Communities and the Rural Poor, and On the Environment: A summary report," April 2001, http://www.saprin.org/philippines/research/phi_mining_sum.pdf (accessed February 16, 2009).

3 "Islanders vow to stop mining" *Bankaw News*, October 8-14, 2000.

4 William N. Holden and R. Daniel Jacobson, "Mining amid decentralization: Local governments and mining in the Philippines," *Natural Resources Forum* 30 (2006), 192.

5 Jimbot Sumook, "Truck plows through human barricade, 1 dead, 1 hurt," *Bankaw News*, April 29-May 5 2001.

6 Citizens' Council for Human Rights (CCHR), "Documented Cases of Human Rights Violations," January 2004 to June 2006, http://forum-asia.org/hrc/wp-content/uploads/2006/06/CCHRcases_of_HRVs%202004_2006orig.doc (accessed February 16, 2009).

7 BM Sabulao, "ES prov'l board seeks halt of mining in Manicani Island," *Leyte Samar Daily Express*, http://leytesamardaily.com/index.php?option=com_content&task=view&id=4627&Itemid=233 (accessed February 16, 2009).

8 World Rainforest Movement, "Mining: Social and Environmental Impacts," 2004, 89-90, http://www.wrm.org.uy/deforestation/mining/text.pdf (accessed February 16, 2009); Palawan NGO Network Inc., "Letter to Mr Kyosuke Sinozawa, Governor of Japan Bank for International Cooperation," June 9, 2006; Peter H. Kuck, "Nickel," US Geological Survey Minerals Yearbook 2002, 53.12.

9 Environmental Legal Assistance Center Inc., "Letter to Mr Kyosuke Sinozawa."

tion can commence without their consent.

What Nickel Asia's subsidiary did, according to ELAC, was to invite members of this IP community to a meeting and asked them to sign what they were led to believe were attendance sheets. Only later did they find out that the sheets were to be attached to a document expressing support for Nickel Asia's project. Affected members of the IP community claim no consent was in fact given and continued to oppose the project.[10] Despite this, the permit was subsequently given.

Nickel Asia's project in Rio Tuba has had deleterious effects on the environment and on the community members' health. Because the mine's dams overflow during the rainy season, rivers have become silted and toxic residues have contaminated water sources. With their lands flooded with laterite, farmers' livelihoods have been negatively affected. Dust and waste from the mine's facilities have been blamed for residents' skin and respiratory problems. Some suffered from skin lesions and difficulty breathing. Many complain of the pungent odor coming from the mine.[11] The government's regulatory agency itself has issued the mine owners a notice of pollution violation.[12]

Taganito, Surigao del Norte
As in Rio Tuba, another Nickel Asia subsidiary, Taganito Mining Corporation (TMC), has been accused by a group of indigenous people, the Mamanwa, of evicting them and illegally mining in their ancestral domains. At one point, a United Nations Special Rapporteur drew attention to the plight of around 30 Mamanwa families who, after having been kicked out of their lands, took to living under a bridge instead.[13] According to the Mamanwa leaders, TMC has been operating in Surigao del Norte since the late 1970s without their consent and without compensating them for the last 12 years, as required by law.[14]

Their call for the mine's closure and for their legally allotted share of the mining revenues repeatedly fell on deaf ears. In January 2009, around 400 Mamanwa community members decided to barricade the road from the mine site to the port in the hope of paralyzing the mine's operations.[15] Despite threats from TMC, the community refused to break their blockade.[16]

On the barricade's third week, TMC announced that it had deposited ₱51 million pesos—but to the account of another Mamanwa organization and for only one year's worth of royalties instead of twelve. TMC did so unilaterally without consulting the protesting community. Mamanwa community leaders immediately denounced the company for its "divide and rule" tactics, a way to buy off one group and pit it against another.[17]

Local residents have complained of diminishing fish catch, blaming the deposition of laterite onto the seabed and the riverbed for the disappearance of local species of shrimp and crab and for the degradation of coral reefs. Farmers fear that mining residues will also affect their farmlands and their crops. They also blame the mining operations for their respiratory problems.[18]

Philex
The Zamoras also own shares in another mining company, Philex, the country's largest copper and gold mining company.

Local residents in Sibutad, Zamboanga del Norte claim that at the time of Philex's operations from 1999 to 2002, the mine's tailings dam repeatedly overflowed. Mudslides blamed on the mine destroyed farmlands and flowed into the sea, turning the bay brown, and killing mangroves, coral, and fish. High levels of mercury and cyanide were detected. Farmers lost their crops and rice production declined. Fishers were unable to sell anything as the mercury level in their fish exceeded safe levels. Landslides, blamed on the mine's deforestation of the mountainside, destroyed houses. Exposure to spring water or water used for irrigation caused skin reactions.

In 2002, the DENR held Philex responsible for the environmental damage and was forced to revoke the mine's permits for repeated violations of environmental regulations. Residents complain of continuing to bear the mine's

10 World Rainforest Movement, "Mining: Social and Environmental Impacts," 89-90; Katherina Mana-Galido, "Revitalized Mining Alarms South Palawan," Environmental Legal Assistance Center, July 12, 2005.
11 World Rainforest Movement, "Mining: Social and Environmental Impacts," 89-90.
12 "Roel Landingin and Jenny Aguilar, "Dirty Past," *NewsBreak*, July-September 2008.
13 Rodolfo Stavenhagen, "Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People," prepared by the United Nations Commission on Human Rights 59th session, 2003, cited in Holden and Ingelson, 385.
14 Ben Serrano, "5 Protesting Tribesmen Missing; Barricade vs. Mining Firms Continue," Mindanao.com, January 31, 2009, http://mindanao.com/blog/2009/01/5-protesting-tribesmen-missing-barricade-vs-mining-firms-continue (accessed February 16, 2009); "Atienza aborts IP uprising in Caraga," *Manila Bulletin*, March 19, 2009.
15 Legal Rights and Natural Resources Center – Kasama sa Kalikasan/FOE-Philippines (LRC-KsK), "5 Mamanwa Protesters still Missing," *MindaNews*, February 12, 2009, http://www.mindanews.com/index.php?option=com_content&task=view&id=5906 (accessed February 16, 2009).
16 Serrano, "5 Protesting Tribesmen Missing; Barricade vs. Mining Firms Continue."
17 Ben Serrano, "Surigao Tribesmen Hit Divide and Rule Tactics over Mining Firms' Royalty Fee Row," Mindanao.com, February 22, 2009, http://mindanao.com/blog/2009/02/surigao-tribesmen-hit-divide-and-rule-tactics-over-mining-firms'-royalty-fee-row/ (accessed February 16, 2009).
18 Personal correspondence with Dr Maria Macabuac-Ferolin, Xavier University, Cagayan de Oro City, July 28, 2009.

impacts and fear that it could be re-opened soon.[19]

Philex's other mine in Tuba and Itogon, Buenget overlaps with 88% of the area within the Lower Agno Watershed Forest Reserve.[20] In 1990, the DENR issued the company a notice of violation for possible water pollution. Then in succeeding years, the mine's tailings pond leaked and eventually collapsed, spilling mining residues in the area.[21] Up to 80 million tonnes of tailings ended up causing heavy siltation, affecting downstream irrigation. In 2008, the National Commission on Indigenous Peoples ordered Philex to temporarily stop its mining operations after a group of affected indigenous peoples claiming ancestral domain rights over the mining area demanded that the company secure their consent first. Philex had apparently earlier signed an agreement with another IP group.[22]

In Negros Occidental, Philex's gold mine leaked tailings, resulting in the silting of the Sipalay River.[23]

19 Doyle, Wicks and Nally, 33-34; Tito Natividad Fiel, "The Impact of Philex Mining Operation in Sibutad," January 5, 2001, http://www.minesandcommunities.org/article.php?a=1442 (accessed February 16, 2009); Robert Goodland and Clive Wicks, "Philippines Mining or Food? Case Study 2: Copper and Gold Mining Zamboanga del Norte – Mindanao Island," The Working Group on Mining in the Philippines, 2008, http://www.piplinks.org/system/files/Mining+or+Food+Case+Study+2.pdf (accessed February 16, 2009).

20 Miranda, et al., 21.

21 Landingin and Aguilar.

22 Rimaliza Opina, "NCIP stops Philex Mining Operations," *Sun.Star Baguio*, February 25, 2008, http://www.sunstar.com.ph/static/bag/2008/02/25/news/ncip.stops.philex.mining.operations.html (accessed February 16, 2009).

23 Jeffrey Stark, Jennifer Li, and Katsuaki Terasawa, "Environmental Safeguards and Community Benefits in Mining: Recent Lessons from the Philippines," Foundation for Environmental Security and Sustainability Working Paper 1, (2006), http://www.fess-global.org/files/GMS-BF_ConferencePaper.pdf (accessed February 16, 2009).

of the interlocking interests that benefit from the CDM. De Ocampo served or serves on the board of dozens of companies, including, among others[32]: EEI Corporation, a construction company which has built coal-fired, diesel/bunker fuel, geothermal, gas, and nuclear-powered generating facilities, oil and gas refineries, as well as mining and cement facilities;[33] Salcon Corporation, which operates a coal-fired power plant in Cebu;[34] and Bacnotan Consolidated Industries, a subsidiary of the PHINMA group which was involved in cement production and has since diversified into steel and other products. [35]

PHINMA itself is a conglomerate which is involved in, among others, power generation, mining, cement production, and oil exploration. Its portfolio includes a diesel power plant in Bulacan and a bunker oil power plant in Guimaras.[36] It is also involved in a controversial oil exploration project in the Cebu-Bohol strait that has been opposed by local fishers.[37]

Apart from subsidizing the Zamoras and their business holdings, the CDM is also providing

32 "Certification of independent directors, by Roberto F. De Ocampo to the Securities and Exchange Commission," April 23, 2009 http://www.pse.com.ph/html/disclosure/pdf/2009/pdf/dc2009-2834_bci.pdf (accessed February 4, 2009).

33 EEI Corporation, "Heavy Industry," http://www.eei.com.ph/heavy_industry.php (accessed February 4, 2009).

34 Philippine Stock Exchange, "Listed Companies: SPC Corporation," http://www.pse.com.ph/html/listedcompanies/listedcompanyinfo.jsp?securitysymbol=spc (accessed February 4, 2009).

35 Bacnotan Consolidated Inc, "Our Company," http://www.bcii.com.ph (accessed February 4, 2009).

36 Trans-Asia Oil and Energy Development Corporation, "Corporate Profile," http://www.transasia-energy.com/company-profile.html (accessed February 4, 2009); Trans-Asia Oil and Energy Development Corporation, "Power Generation," http://www.transasia-energy.com/operations/power-generation.html (accessed February 4, 2009).

37 Kit Bagaipo and Jhunnex Napallacan, "300 fishers protest oil exploration in Cebu-Bohol Strait," *Philippine Daily Inquirer*, September 9, 2008, http://newsinfo.inquirer.net/inquirerheadlines/regions/view/20080909-159499/300-fishers-protest-oil-exploration-in-Cebu-Bohol-Strait (accessed February 4, 2009); D'jay Lazaro, "Fishers stopped Aussie oil exploration ships off Cebu," *GMANews.TV*, September 5, 2008, http://www.gmanews.tv/story/118479/Fishers-stopped-Aussie-oil-exploration-ships-off-Cebu (accessed February 4, 2009); Donabelle Gatdula, "Trans-Asia Oil to pursue seismic survey in Visayas," *The Philippine Star*, April 8, 2009, http://www.philstar.com/Article.aspx?articleId=456127&publicationSubCategoryId=66 (accessed February 4, 2009).

additional income streams to Lucio Tan, the country's second richest man and one of only two in the Philippines to make it to Forbes' list of billionaires.[38] One of his conglomerate's companies, alcoholic drinks maker Tanduay Distillers, stands to earn between ₱0.4 billion to ₱1.2 billion from the CDM by treating wastewater from one of its ethanol production plants.[39] It is the fourth largest CDM project in terms of credits to date.

Perennially fighting charges of tax evasion in the country's courts, Tan has built a fortune from over 30 companies involved in a wide array of products and services—from cigarettes to beer, hotels to schools, airlines to banks, and so on.[40] So vast are his holdings that many attempts to list all of them often come with a disclaimer that such attempts are not complete. Known to be one of the biggest campaign contributors during elections, Tan's financial support is much sought after; in return, his businesses have been rewarded and protected.[41]

Tanduay Distillers, the particular Tan-owned company with a CDM project, belongs to that line of business in Tan's holdings which has been implicated in pollution violations. In 1993, Tanduay's sister company Asia Brewery Inc.'s plant in Cagayan de Oro City pleaded guilty to violating a law that requires companies to secure an environmental compliance certificate before operating. The plant had been operating for a year before it secured its certificate. In succeeding years, Asia Brewery was blamed for discharging its waste into the city's Macajalar Bay, causing an algal bloom that killed fish and other marine animals and produced a stench that affected residents' health.[42] In Pulupandanan town in Negros Occidental, Tan's Asian Alcohol Corporation was ordered shut down temporarily by the government for violating the Clean Water Act.[43] Fishers and residents accuse its plant of dumping effluents and sludge into the sea, depriving them of fish catch.[44]

Among Tan's other companies with heavy carbon footprints is Philippine Airlines (PAL), the country's flag carrier which was privatized and bought by Tan's holding company in 1992. With 35 planes in its fleet, PAL flew nearly eight million passengers to 17 local and 33 international destinations in 2008.[45] On the trans-Pacific route, PAL held a 37% market share.[46] Domestically, PAL and another domestic carrier which Tan also owns, Air Philippines, controlled 50% of the domestic market in terms of passengers flown.[47] Aside from airlines, Tan also has interests

38 Suzanne Nam, "The Philippines Richest 40: Lucio Tan and family," *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Lucio-Tan-family_FQVX.html; Luisa Kroll, Matthew Miller and Tatiana Serafin, eds., "The World's Billionaires 2009," *Forbes*, March 11, 2009, http://www.forbes.com/lists/2009/10/billionaires-2009-richest-people_Lucio-Tan-family_FQVX.html (accessed February 5, 2009).

39 Wastewater Treatment using a Thermophilic Anaerobic Digestor at an Ethanol Plant in the Philippines, "Project Design Document," 2, http://cdm.unfccc.int/UserManagement/FileStorage/GESRI31ULK13SC6865RX5L14DH92BP (accessed February 5, 2009).

40 Jerry Esplanada, "'Kapitan' steers a fortune toward education," *Philippine Daily Inquirer*, July 8, 2008, http://newsinfo.inquirer.net/inquirerheadlines/learning/view/20080708-147053/%91Kapitan%92_steers_a_fortune_toward_education (accessed February 5, 2009).

41 Sheila S. Coronel, "Into the Light," *Philippine Center for Investigative Journalism iReport* V, no. 1 (January to March 1999), http://www.pcij.org/imag/PublicEye/lucio.html (accessed June 30, 2009); Alfred W. McCoy, *An Anarchy of Families* (Madison: University of Wisconsin Press, 2009), xxiii.

42 Lina Sagaral Reyes, "Fishers Blame Lucio Tan Brewery for Marine Blight," Philippine Center for Investigative Journalism, September 20-21, 1999, http://www.pcij.org/stories/1999/menace.html (accessed February 5, 2009); Lina Sagaral Reyes, "Independent Tests Show Asia Brewery May be to Blame," Philippine Center for Investigative Journalism, September 20-21, 1999, http://www.pcij.org/stories/1999/menace2.html (accessed February 5, 2009).

43 D'jay Lazaro, "Govt shuts down 5 firms for violating environmental laws," *GMANews.TV*, August 5, 2008, http://www.gmanews.tv/story/111555/Govt-shuts-down-5-firms-for-violating-environmental-laws (accessed February 5, 2009).

44 George M. dela Cruz, "500 rally vs alcohol plant," *Sun.Star Bacolod*, May 12, 2009, http://www3.sunstar.com.ph/bacolod/localnews?page=22 (accessed February 5, 2009) George M. Dela Cruz, "Lucio Tan's firm eyes P500M expansion," *Sun.Star Bacolod*, May 30, 2009, http://www.sunstar.com.ph/bacolod/lucio-tan's-firm-eyes-p500m-expansion (accessed February 5, 2009).

45 PAL Holdings Inc., "Annual Report Pursuant to Section 17 of the Securities Regulation Code and Section 141 of the Corporation Code of the Philippines," Securities and Exchange Commission, March 31, 2008, http://www.pse.com.ph/html/ListedCompanies/pdf/2009/PAL_17A_Mar2009.pdf (accessed February 5, 2009).

46 PAL Holdings Inc., "Annual Report Pursuant to Section 17 of the Securities Regulation Code and Section 141 of the Corporation Code of the Philippines," Securities and Exchange Commission, March 31, 2008, http://www.pse.com.ph/html/ListedCompanies/pdf/2009/PAL_17A_Mar2009.pdf (accessed February 5, 2009).

47 "Cebu Pacific retains leadership in domestic market in 2008," *The Philippine Star*, February 10, 2009, http://www.philstar.com/Article.aspx?articleid=438918 (accessed February 5, 2009).

in other aviation-related businesses such as aircraft maintenance, ground handling, cargo, in-flight catering, etc.[48]

By one estimate, aviation's use of fossil fuels accounted for 4% of all carbon emissions in the Philippines in 1990.[49] The entire transportation sector contributed 20% of all of the country's greenhouse gas emissions.[50] Globally, transportation accounts for 14% of all greenhouse gas emissions. (**Figure 28: World Greenhouse Gas Emissions by Sector**)

Aviation's contribution currently stands at 2% but this number is seen as misleading because it does not take into account the ozone-producing nitrogen oxide emissions, condensation trail formation, water vapor release and other high-altitude impacts of aircraft use.[51]

According to one estimate, aviation's actual contribution may be between 4% to 9%, with the higher limit approaching the contribution of the entire industrial sector (10%). Aviation being one of the fastest growing sources of emissions, this share could continue to surge in the coming years—as much as 40% by 2050 in one count.[52] Compared to other modes of transport, aviation—which on the whole remains used mostly by a minority of the world's higher-income earners—has the greatest climate impact.[53]

48 Philippine Stock Exchange Official Website, "Listed Companies: MacroAsia Corporation," http://www.pse.com.ph/ (accessed February 5, 2009).

49 Asian Least-Cost Greenhouse Gas Abatement Strategy Project, "Philippines Task A2," Asian Development Bank, http://lnadbg4.asiandevbank.org/oes0019p.nsf/e52ac04f6ecfc57bc8256739002e644f/3d9dc5f40cadf367c825675c00232779/$FILE/phil_a2.pdf (accessed February 5, 2009).

50 World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*.

51 *Ibid.*; Baumert, *et al.*, 67.

52 Climate Action Network Europe and European Federation for Transport and Environment, "Clearing the Air: The Myth and Reality of Aviation and Climate Change," 2006, 6 http://www.transportenvironment.org/Publications/prep_hand_out/lid:430 (accessed February 5, 2009).

53 World Development Movement and New Economics Foundation, "Plane Truths: Do the Economic Arguments for Aviation Growth Really Fly?," September 2008, 2, http://www.wdm.org.uk/resources/reports/climate/planetruths27092008.pdf (accessed February 5, 2009); Climate Action Network Europe and European Federation for Transport and Environment, "Clearing the Air: The Myth and Reality of Aviation and Climate Change," 8.

Apart from aviation, Tan is also into industrialized agri-business. His group owns the second largest pig factory farm in the Philippines, Foremost Farms, which is itself in the process of seeking CDM credits for the same kind of swine wastewater treatment projects described earlier.[54] One of Tan's other firms is Grandspan Development Corporation, which manufactures steel products and asbestos-reinforced cement sheets that have been used in some of the country's large infrastructure projects, including power plants.[55]

In recent years, Tan has also ventured into the large-scale mining sector. In southern Palawan, near the mining operations of the Zamoras, Tan's MacroAsia Mining has begun to explore for nickel, splitting the local community and inciting opposition from residents, backed by environmentalists, church groups, and some local government officials.[56] Claimed as the ancestral land of the Pala'wan indigenous people, the area which MacroAsia wants to mine has old growth forest, is home to rare and endangered wildlife, and is a critical watershed.[57] MacroAsia has been accused of attempting to sabotage this area's designation as a "protected area"

54 "Expansion plans in the Philippines," *Pig International Electronic Newsletter*, February 2005, http://www.wattnet.com/Newsletters/pig/pdf/feb05pigenews.pdf (accessed February 5, 2009); "Lucio Tan-led Foremost Farms signs MOU with Mitsubishi to sell carbon credits," abs-cbnNews.com, October 1, 2008, http://www.abs-cbnnews.com/business/10/01/08/lucio-tan-led-foremost-farms-signs-mou-mitsubishi-sell-carbon-credits (accessed February 5, 2009); "Lucio Tan Group looking into CDM piggery projects," *The Philippine Star*, October 10, 2008

55 Grandspan Development Corporation, "About Us," http://www.grandspan.net/aboutus.htm (accessed February 5, 2009).

56 Jennifer B. Austria, "Lucio Tan joins mining," *Manila Standard Today*, March 30, 2006, http://www.manilastandardtoday.com/?page=business01_mar30_2006 (accessed February 5, 2009); Datu Abdelwin Sangkula and Marlon Tamsi, "The Mining Controversy and Dynamics of Conflict in Brooke's Point, Palawan: A Case Study Prepared for the Ateneo School of Government," http://gator366.hostgator.com/~ateneo/index.php?option=com_docman&task=doc_download&gid=5&Itemid=30 (accessed February 5, 2009).

57 Redempto Anda, "Palawan mountain now a protected area," *Inquirer.net*, July 12, 2009, http://newsinfo.inquirer.net/breakingnews/regions/view/20090712-215088/Palawan_mountain_now_a_protected_area (accessed February 5, 2009); Datu Abdelwin Sangkula and Marlon Tamsi, "The Mining Controversy and Dynamics of Conflict in Brooke's Point, Palawan: A Case Study Prepared for the Ateneo School of Government," http://gator366.hostgator.com/~ateneo/index.php?option=com_docman&task=doc_download&gid=5&Itemid=30 (accessed February 5, 2009).

in order to remove any legal constraints on their mining operations.[58] Indicating an expansion of its mining activities, MacroAsia has also sought permits to explore in Marinduque island, as well as in Sultan Kudarat and Sarangani provinces in Mindanao.[59]

Aside from supporting some of the most dominant mining firms in the country, the CDM is also backing some of the biggest players in the energy industry. The fifth and seventh largest CDM projects in terms of credits are the Hedcor Sibulan Hydroelectric Project in Davao and the Nasulo Geothermal Project in Negros Oriental, which stand to earn around 6% and 4% respectively of all credits in the country to date. (**See Table 10: Registered CDM Project by Nature of Activity, % of Claimed Reductions and Expected Revenues**) They are owned by companies linked to the Aboitizes and the Lopezes respectively, two families that have been among the biggest beneficiaries of the ongoing privatization of state-owned power assets or what industry analysts describe as the wholesale transfer of the state's monopoly power in the strategic energy sector into the hands of the private sector.[60] Many of the power plants they have acquired have a history checkered with environmental damage and human rights violations—a past that may be carried over into the future as evidenced by current developments. (See **Sidebar 3: The Lopezes' and the Aboitizes' Dirty Power**)

Among two of the most instantly recognizable names in Philippine business and politics, the Lopezes and Aboitizes built their fortune over the last few decades using their close connections to powerful politicians in government.[61] Aside from energy, the Lopezes and the Aboitizes own or have interests in some of the biggest corporations in telecommunication, transportation, construction, banking, real estate, tourism, food production, logistics, shipbuilding, and other industries.[62] The Aboitizes also previously had logging concessions in Mindanao.[63]

For several generations now, the Lopezes have benefited—though at one point suffered— from their ties to a succession of Philippine Presidents. Though their companies were sequestered by the late dictator Ferdinand Marcos after a falling-out, the Lopezes subsequently managed to regain and expand their business holdings starting from the assumption to power of the Aquino administration.[64] Today, the Lopezes are said to derive enormous intangible political power, not just from their wealth, but by their control of the country's largest media corporations, which happened to have employed some of the country's top elected officials, including current presidential aspirants. Two branches of the

58 Redempto Anda, "Mining groups accused of blocking protected area in Palawan," *Inquirer.net*, August 7, 2007, http://newsinfo.inquirer.net/breakingnews/regions/view/20070807-81106/Mining_groups_accused_of_blocking_protected_area_in_Palawan (accessed February 5, 2009); Redempto Anda, "Lucio Tan firm seen behind plans vs. Mt. Mantalingahan," *Inquirer.net*, April 1, 2008, http://newsinfo.inquirer.net/inquirerheadlines/regions/view/20080401-127599/Lucio-Tan-firm-seen-behind-plans-vs-Mt-Mantalingahan (accessed February 5, 2009); Redempto Anda, "Palawan mountain now a protected area," *Inquirer.net*, July 12, 2009, http://newsinfo.inquirer.net/breakingnews/regions/view/20090712-215088/Palawan_mountain_now_a_protected_area (accessed February 5, 2009); Sangkula and Tamsi.

59 "MacroAsia to venture into metal exploration in Marinduque," *BusinessWorld*, December 3, 2007; Amador T. Sending, MacroAsia Vice President, "Letter to Philippine Stock Exchange Disclosure Department," October 2, 2007.

60 Alecks Pabico, "Short-circuited reforms in the power sector," *Philippine Center for Investigative Journalism iReport*, November 16, 2007; Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A study of the development of privatization of NPC assets," November 2008.

61 On the Lopezes, see Alfred W. McCoy, "Rent-Seeking Families and the Philippine State: A History of the Lopez Family," in *An Anarchy of Families*: *State and Family in the Philippines*, ed. Alfred W. McCoy (Quezon City: Ateneo de Manila University Press, 2007), 429-536; Patricio N. Abinales and Donna J. Amoroso, *State and Society in the Philippines* (Pasig City, Philippines: Anvil Publishing, 2005), 168;185; Eric Gutierrez, *The Ties that Bind: A Guide to Family, Business and Other Interests in the Ninth House of Representatives* (Pasig: Philippine Center for Investigative Journalism, 1994), 22-23; On the Aboitizes, see John Thayer Sidel, *Capital, Coercion and Crime: Bossism in the Philippines* (Palo Alto: Stanford University Press,1999),133-134.

62 For Lopezes, see Benpres Holdings Corporation, "Corporate Information," http://www.benpres-holdings.com/corpinfo.asp (accessed February 6, 2009); Aboitiz Group, "About Aboitiz Group," http://www.aboitiz.com/Main/index.php?p=33 (accessed February 6, 2009)."

63 Sidel, 134.

64 McCoy, "Rent-Seeking Families and the Philippine State: A History of the Lopez Family," in Mccoy, *An Anarchy of Families*: *State and Family in the Philippines*, 429-536.

TABLE 15
The Lopezes' Power Plants

Name of Plant	Location	Dependable Capacity (in MW)
Coal		
Quezon Private Power Limited	Mauban, Quezon	460.00
Diesel		
Bauang Diesel Power Plant	Bauang, La Union	225.33
Panay Electric Company	Iloilo City	-
Natural Gas		
Sta. Rita combined-cycle natural gas-fired Power Plant	Sta. Rita, Batangas	1,000.00
San Lorenzo natural gas-fired Power Plant	Sta. Rita, Batangas	500.00
San Antonio	Echague, Isabela	3.00
Geothermal		
Mindanao I (Mt. Apo)	Kidapawan, North Cotabato	49.75
Mindanao II (Mt. Apo)	Kidapawan, North Cotabato	49.75
Tongonan Geothermal Power Plant	Tongonan, Leyte	584.29
Northern Negros Geothermal Power Plant	Bago City, Negros Occidental	12.00
Large Hydroelectric Plants		
Pantabangan-Masiway Hydroelectric Power Plant	Pantabangan, Nueva Ecija	111.00
Small Hydroelectric		
Agusan Mini-hydroelectric Power Plant	Manolo Fortich, Bukidnon	1.60
Total		2,996.72

As of April 2009

Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

Lopez extended family are ranked 16th and 28th richest in the Philippines.[65]

The Aboitizes' intimacy with political power dates back to as early as the ascendancy of the Osmeña family, whose patriarch was a former President, and whose other members assumed powerful political positions in the Aboitizes' home province of Cebu.[66] More recently, Enrique Aboitiz of the Aboitiz clan has gained a reputation for being one of three businessmen closest to President Gloria Macapagal-Arroyo. Having been one of her top fundraisers in the last elections, Enrique Aboitiz has supposedly been brought into the President's "unofficial" cabinet.[67] Enrique is considered 35th while nephew Jon Ramon is 24th richest in the Philippines.[68]

The Nasulo Geothermal Project is owned by the Philippine National Oil Company – Energy Development Corporation (PNOC-EDC), a formerly state-owned corporation that is now 60%-owned by the Lopezes' First Gen Corporation. PNOC-EDC is said to be the country's biggest privately owned power company and First Gen the largest vertically-integrated power generation company in the country.[69] (See **Table 15: The Lopezes' Power Plants**) With over 3,200 MW installed power generating capacity, Lopez-owned or controlled power plants produce nearly one quarter (23%) of the energy produced in the national grid. Nearly three-quarters (73%) of this comes from fossil fuels such as coal, diesel, and natural gas; while the rest is from geothermal (24%) and hydroelectric sources. (See **Table 16: Sources of the Lopezes' Power; Figure 29: Sources of the Lopezes' Power**)

The Hedcor Sibulan Hydroelectric Project is owned by a subsidiary of the Philippine Hydropower

65 Suzanne Nam, "The Philippines Richest 40: Oscar Lopez and family" *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Oscar-Lopez-family_8F1O.html (accessed February 5, 2009); Suzanne Nam, "The Philippines Richest 40: Eugenio Lopez III and family" *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Oscar-Lopez-family_8F1O.html (accessed February 5, 2009).

66 Sidel, 133-134.

67 Glenda Gloria, "Where Factions Thrive," *Newsbreak*, February 11, 2007, http://www.*Newsbreak*.com.ph/index.php?option=com_content&task=view&id=2401&Itemid=88889010 (accessed February 6, 2006).

68 Suzanne Nam, "The Philippines' Richest 40: Jon Ramon Aboitiz and family," *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Jon-Ramon-Aboitiz-family_IOLY.html (accessed February 5, 2009); Suzanne Nam, "The Philippines' Richest 40: Enriquez Aboitiz and family" *Forbes*, October 15, 2008, http://www.forbes.com/lists/2008/86/philippinerichest08_Enrique-Aboitiz-family_HEFX.html (accessed February 5, 2009).

69 "Philippines' EDC to sell up to $165 mln bonds, notes," Reuters, June 19, 2009, http://www.reuters.com/article/rbssUtilitiesElectric/idUSMAN46341520090619 (accessed February 5, 2009); First Gen Corporation, "Our Company," http://www.firstgen.com.ph/ (accessed February 5, 2009).

SIDEBAR 3:

The Lopezes' and the Aboitizes' Tainted Power Sources

Two registered CDM projects, the Hedcor Sibulan Hydroelectric Project in Davao and the Nasulo Geothermal Project, are being developed by subsidiaries of the Aboitiz group and the Lopez group respectively. These conglomerates are today's largest and second largest private power producers in the country, producing nearly a third of all fossil fuel-based energy in the national grid. But even their "renewable" energy sources have had negative local repercussions.

Having acquired most of their power generating assets from the government, these two corporations also inherit—and, by early indications, appear set to continue—the ecologically and socially destructive records of their plant's former owners.

The Lopez group produces up to 50% of the national grid's geothermal energy, a source of power that may emit less greenhouse gases than fossil fuels but may be considered "clean" only by those who use the energy it brings without having to bear with its local impacts.

Through their Philippine National Oil Company-Energy Development Corporation (PNOC-EDC), the Lopezes now own and operate the geothermal power plants at Mt Apo, the country's highest peak and home to the endangered Philippine monkey-eating eagle. In the late '80s, the then government-owned corporation began exploring and drilling in the area without environmental clearance, in violation of the law. To circumvent another existing law protecting national parks such as Mt Apo from commercial exploitation, the Philippine President designated areas within the park as "geothermal reserve" – and therefore exempt from the protection.[1]

The geothermal plant's eventual construction entailed the destruction of parts of the last major forest cover in this region of Mindanao, against the will of the Bagobo indigenous people who live in the area and consider the mountain sacred. Accusing them of being "communists," the government harassed and even bombed the Bagobo communities who resisted the project.[2]

Now the Lopezes seem to be carrying on with these practices in their new geothermal energy project in another mountain, Mt Kanlaon, in Negros island—but this time, with potential support from a scheme that actually purports to support environmental protection efforts. To construct roads and other facilities, the Northern Negros Geothermal Project threatens to clear parts of the Mt Kanlaon national park, an old-growth lowland forest located in a critical watershed inhabited by wildlife.

But a broad-based grassroots and Church-backed community campaign has emerged to oppose the project. The Lopez-owned company is accused of maneuvering to undermine a law that prohibits energy exploration and resource extraction in natural parks – just as it was undermined in the case of Mt Apo.[3] Despite this opposition, around 4,000 trees in 12.5 hectares of forest have reportedly been cut to make way for the project.[4] And yet, this project, like the Lopezes' own already registered Nasulo project, is also seeking CDM funds. If approved, the Northern Negros project stands to earn between ₱0.7 billion to ₱2.2 billion from the CDM.

Another field belonging to the PNOC-EDC in Valencia, also in Negros, overlaps with half of the protected area of the Balinsasayao Twin Lakes National Park.[5]

The Aboitizes, for their part, acquired some of the controversial large dams that have marred and disfigured the Cordillera mountain range in the northern Philippines: the Magat, Ambuklao, and Bingat Dams. In building the Ambuklao and Bingat dams in the late '50s, the government displaced the Ibaloy indigenous people, bulldozed their rice fields, and moved them to other provinces, including faraway Palawan. Unable to adapt, isolated from the communities where they resettled, and cut off from their kin, many subsequently died. A few chose to go back to their homeland in the Cordillera but, with no homes to return to, found themselves

1 Antoinette Royo, "Against the People's Wishes: The Mt. Apo Story," in *The Struggle for Accountability: the World Bank, NGOs, and grassroots movements*, eds. Jonathan A. Fox and L. David Brown (Cambridge, MA: MIT Press, 1998), 151-179.

2 Ibid.; Robin Broad with John Cavanagh, *Plundering Paradise: The struggle for the environment in the Philippines*, (Berkeley and Los Angeles CA: University of California Press, 1993), 33-35.

3 Freedom from Debt Coalition, "On PNOC-EDC's Geothermal Expansion Project in Mt. Kanlaon National Park," September 18, 2008, http://www.fdc.ph/index.php?view=article&id=340%3Afdc-on-pnoc-edcs-geothermal-expansion-project-in-mt-kanlaon-national-park&option=com_content&Itemid=87 (accessed February 16, 2009); Save Mt. Kanlaon Natural Park, "Opposing RA 9154 & the Intrusion of the PNOC-EDC Geothermal Project into Mount Kanlaon Natural Park: Position Paper of the Coalition to Save Mt. Kanlaon Natural Park," http://geocities.com/savekanlaon/kanlaonposition.htm (accessed February 16, 2009).

4 "Save Mt. Kanlaon Trees, Atienza Urged," *Philippine Daily Inquirer*, June 22, 2008.

5 Miranda, et al., 21.

new sites on unoccupied hills or sought shelter with their relatives.[6]

Hedcor, the Aboitiz subsidiary developing the Sibulan CDM project, points out in its registration documents that Sibulan's being a "run-of-river" type of hydroelectric project avoids the "negative impacts" of large dams.[7] It neglects to point out that 30% of its parent company's energy portfolio actually comes from large dams, with less than 1% from small hydroelectric projects. In fact, of all the energy produced from large dams in the country, 15% comes from the Aboitizes. Hedcor's other projects at the Talomo and Lipdas rivers in Mindanao have been the target of environmentalists' campaigns.

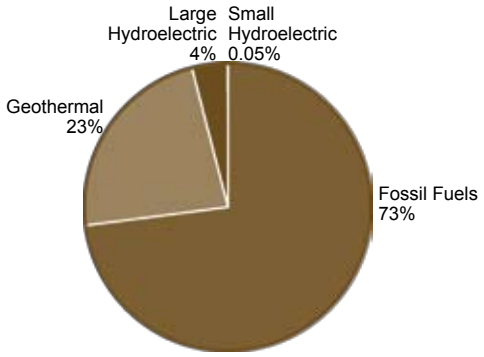
Aside from dams, one of the Aboitizes' geothermal energy acquisitions, in Tiwi, Albay, was also opposed by residents fearing the negative environmental effects – the odorous gases, heated water, and possible subsidence – from the plant.[8]

TABLE 16
Sources of the Lopezes' Power

Sources	in MW	as % of own production	as % of national total
Fossil fuels	2,188	73%	25%
Geothermal	696	23%	50%
Large Hydroelectric	111	4%	4%
Small Hydroelectric	2	0.05%	3%
Solar	0	0%	0%
Wind	0	0%	0%
TOTAL	2,997	100%	23%

Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

FIGURE 29
Sources of the Lopezes' Power



Source:
Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008

Corporation (PHC), a unit of the Aboitiz group of companies. Next to the Lopezes, the Aboitizes control the second largest power generation and distribution company in the country. (See **Table 17: The Aboitizes' Power Plants**) Fossil fuel powers most (42%) of their plants; 30% comes from large dams, and the remaining 27% from geothermal power. (See **Table 18: Sources of the Aboitizes' Power; Figure 30: Sources of the Aboitizes' Power**) With their 18 power plants, the Aboitizes provide 11% of the national grid's dependable capacity. Though they are into a wide range of

6 Dexter A. See, "Displaced tribes urge Napocor execs: Fulfill promises 51 years ago," *Northern Philippine Times*, February 26, 2008; Cordillera People's Alliance, "Dams in the Cordillera," 2001, http://internationalrivers.org/files/021214.corddams.pdf (accessed February 16, 2009).

7 Hedcor Sibulan 42.5 MW Hydroelectric Power Project, "Project Design Document," 33, http://cdm.unfccc.int/UserManagement/FileStorage/C29D5CI593GAN0JBV0RTFVQM9UHMET (accessed February 4, 2009).

8 Krinks, 159.

TABLE 17
The Aboitizes' Power Plants

Name of Plant	Location	Dependable Capacity (in MW)
Coal		
Mindanao Coal-fired Thermal Power Plant I	Villanueva, Misamis Oriental	105.00
Mindanao Coal-fired Thermal Power Plant II	Villanueva, Misamis Oriental	96.00
Diesel		
Southern Philippines Power Corporation	Alabel, Sarangani	55.35
Western Mindanao Power Corp.	Zamboanga City	100.00
Cebu Private Power Corp.	Cebu City	61.72
Cotabato Light and Power Company	Cotabato	7.50
Davao Light and Power Company	Davao City	42.00
East Asia Diesel (Duracom Unit 3 and 4)	Navotas, Metro Manila	109.00
East Asia Utilities (MEPZA)	Cebu City	42.00
Geothermal		
Makiling-Banahaw (MakBan) Geothermal Power Plant 1	Calauan, Laguna	58.13
Makiling-Banahaw (MakBan) Geothermal Power Plant 2	Calauan, Laguna	43.84
Makiling-Banahaw (MakBan) Geothermal Power Plant 3	Calauan, Laguna	56.10
Makiling-Banahaw (MakBan) Geothermal Power Plant 4	Calauan, Laguna	58.39
Makiling-Banahaw (MakBan) Geothermal Power Plant 5	Calauan, Laguna	14.87
Makiling-Banahaw (MakBan) Geothermal Power Plant 6	Calauan, Laguna	-
Makiling-Banahaw (MakBan) Geothermal Power Plant 7	Calauan, Laguna	18.25
Makiling-Banahaw (MakBan) Geothermal Power Plant 8	Calauan, Laguna	12.56
Makiling-Banahaw (MakBan) Geothermal Power Plant 9	Calauan, Laguna	17.10
Makiling-Banahaw (MakBan) Geothermal Power Plant 10	Calauan, Laguna	12.54
Tiwi Geothermal Power Plant 1	Tiwi, Albay	13.53
Tiwi Geothermal Power Plant 2	Tiwi, Albay	26.36
Tiwi Geothermal Power Plant 3	Tiwi, Albay	-
Tiwi Geothermal Power Plant 4	Tiwi, Albay	-
Tiwi Geothermal Power Plant 5	Tiwi, Albay	43.66
Tiwi Geothermal Power Plant 6	Tiwi, Albay	29.03
Large Hydroelectric Plants		
Ampohaw and Bineng Plants	Banengbeng, Sablan, Benguet	8.98
Bakun AC Hydroelectric Power Plant	Alilem, Ilocos Sur	35.06
Magat Hydroelectric Power Plant	Ramon, Isabela	317.00
Ambuklao Hydroelectric Power Plant	Bokud, Benguet	-
Binga Hydroelectric Power Plant	Itogon, Benguet	78.82
Talomo Hydroelectric Power Plant	Davao City	3.26
Northern Mini Hydro Corporation	Bakun, Benguet	7.34
Sal-angan Plant	Itogon, Benguet	0.50
Total		1,473.89

Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

enterprises, as much as 69% of the Aboitizes' profits comes from their interests in the power sector.[70]

Combined, the power plants of the Lopezes and the Aboitizes produce as much as a third of all fossil fuel-generated power in the country today; the rest is produced by the remaining power plants owned by the government and by over a dozen other private power companies and cooperatives. (See **Table 19: Sources of the Lopezes' and Aboitizes' Combined Power; Figure 31: Sources of the Lopezes' and Aboitizes' Combined Power**) Ironically, the Lopezes' and Aboitizes' CDM projects claim credits for "displacing" fossil fuels used in the national grid. As will be discussed below, preventing the use of fossil fuels is the single most common reason invoked by CDM projects that produce electricity to justify why they deserve to be awarded credits.

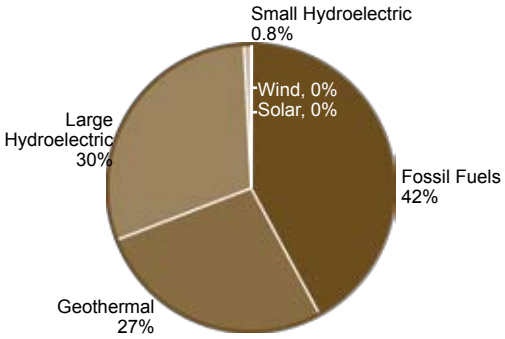
The Lopezes and the Aboitizes are therefore claiming to be displacing a fraction of the fossil fuel which their very own power plants would have used. This set-up introduces what are called in economics as "perverse incentives": the more fossil fuels these companies actually use, the more fossil fuels they can claim to be "displacing," and the more emissions "reductions" they will earn from – allowing them to invest in even more power plants that will use even more fossil fuels, thereby allowing them to claim even more "reductions."

Other smaller CDM projects have links with some of the largest multinational companies in the world, with their own tarnished environmental records. For example, the biggest swine wastewater treatment projects, at Excel and Amigo farms, are being developed by a unit of Cargill,[71] the global agribusiness giant that once spilled toxic materials into the San Francisco Bay, and whose network of processing plants worldwide is reported to emit hazardous materials into the atmosphere. Cargill, which has been penalized by the US government

70 Lala Rimando, "Goodbye shipping: Aboitiz to focus on power," *Newsbreak*, September 25, 2008, http://newsbreak.com.ph/index.php?option=com_content&task=view&id=5378&Itemid=88889053 (accessed February 5, 2009).

71 Amy Remo, "Energy from livestock wastes to power up communities," *Philippine Daily Inquirer*, April 30, 2008, http://business.inquirer.net/money/topstories/view/20080430-133539/Energy-from-livestock-wastes-to-power-up-communities (accessed February 5, 2009).

FIGURE 30
Sources of the Aboitizes' Power



Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008

TABLE 18
Sources of the Aboitizes' Power

Source	Capacity in MW	as % of own production	as % of national total
Fossil fuels	619	42%	7%
Geothermal	404	27%	29%
Large Hydroelectric	440	30%	15%
Small Hydroelectric	11	0.8%	21%
Solar	0	0%	0%
Wind	0	0%	0%
Total	1,474	100%	11%

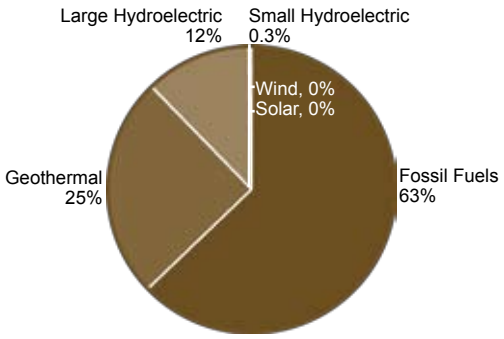
Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

TABLE 19
Sources of the Lopezes' and Aboitizes' Combined Power

Sources	in MW	as % of own production	as % of national total
Fossil fuels	3,030	63%	32%
Geothermal	1,486	25%	79%
Large Hydroelectric	735	12%	19%
Small Hydroelectric	18	0%	24%
Solar	0	0%	0%
Wind	0	0%	0%
Total	5,270	100%	34%

Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

FIGURE 31
Sources of the Lopezes' and Aboitizes' Power



Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008

TABLE 20
List of World Bank CDM Projects in the Philippines, with Estimated Revenues

Name of Project	'Reductions' as % of Total	Estimated Revenues
20 MW Nasulo Geothermal Project	4.3%	₱305-931 million
NorthWind Bangui Bay Project	3.3%	₱231-705 million
Laguna de Bay Community Waste Management Project 1	0.3%	₱25-75 million

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

Companies' decision to avail of carbon credits does not mean that the CDM is helping them turn away from businesses that promote climate change. What the CDM can in fact do is to improve their cash flow, enabling them to expand their operations in ways they deem to be profitable.

for pollution violations, is at the forefront of clearing forests for soy and palm oil production in developing countries.[72] The owners of Amigo Farm itself, along with a number of other swine farms involved in the CDM, have been cited for pollution violations by the government. (See **Table 14: List of CDM Projects developed by or linked to companies cited for pollution violation by the government**)

The cement projects described earlier are being developed by local subsidiaries of Lafarge and Holcim, the world's largest and second largest cement makers,[73] which have been charged for pollution violations in other countries.[74] The plants of Holcim's local subsidiary – whose chief executive Magdaleno Albarracin was the country's 30th richest in Forbes' 2006 list – have been fined by the DENR for failing air pollution standards.[75] Its plant in Davao is being opposed by the local community because it reportedly dumps cement and coal waste in the area, which is close to the sea. [76]

Apart from boosting the profits of multinational corporations, three registered CDM projects in

72 Food and Water Watch, "Cargill: A Threat to Food and Farming," August 2008, www.foodandwaterwatch.org/food/pubs/reports/cargill (accessed February 5, 2009).

73 Freedonia Group, "World Cement to 2008: Market Size, Market Share, Market Leaders, Demand Forecast, Sales, Company Profiles, Market Research, Industry Trends," cited in Baumert, *et al.*, 75.

74 Lucy Komisar, "Transnational Corporations Push Voluntary Self-Regulation at Johannesburg Earth Summit," Pacific News Service, August 26, 2002, http://www.corpwatch.org/article.php?id=3709 (accessed February 5, 2009); Terry Flynn, "Drywall maker Lafarge cited by state as polluter," *The Cincinnati Enquirer*, August 17, 2001, http://www.enquirer.com/editions/2001/08/17/loc_drywall_maker.html (accessed February 5, 2009); "ECZ finds Larfage Cement guilty of pollution," *Lusaka Times (Zambia)*, March 16, 2009, http://www.lusakatimes.com/?p=9643 (accessed February 5, 2009); "US Lafarge quarry sued by Department of Environment," *AggregateResearch.com*, May 15, 2009, http://www.aggregateresearch.com/article.aspx?ID=16248 (accessed February 5, 2009).

75 Justin Doebele, "Philippines 40 Richest, *Forbes*, December 25, 2006, http://www.forbes.com/global/2006/1225/039_3.html (accessed February 5, 2009); Environmental Management Bureau, "Pollution Adjudication Board cases," http://www.emb.gov.ph/pab/template/PAB_Cases_2008.htm (accessed February 5, 2009).

76 "DENR allows renewal of Holcim's lease agreement along Davao coastal area", *Balita.ph*, June 23, 2009, http://balita.ph/2009/06/23/denr-allows-renewal-of-holcims-lease-agreement-along-davao-coastal-area/(accessed February 5, 2009).

the Philippines provide additional business for the World Bank: the Nasulo geothermal plant, the wind power project in Ilocos, and the Laguna de Bay solid waste project. (See T**able 20: List of World Bank CDM Projects in the Philippines, with Expected Revenues**) Its rhetoric notwithstanding, the World Bank continues to be one of the world's biggest sources of financing for large-scale oil, gas, coal and other extractive projects. Last year, the World Bank increased funding for fossil fuels by 102%, even as its allocation for renewable energy grew by only 11%.[77] In the Philippines, the World Bank has recently provided funding for the privatization of two coal plants, Calaca and Masinloc—with the Lopezes and the Aboitizes joining the bidding. [78] In the last decade, it approved $28 billion to fund fossil fuel projects which are estimated to have contributed over 43 billion tons of carbon emissions—or nearly five times what all CDM projects will "reduce" by 2020.[79]

The World Bank has likewise been the largest single source of funds for large hydropower dams, providing around $75 billion for the construction of 538 large dams in 92 countries since 1948, thereby displacing millions of people and causing massive ecological damage. [80] One of these would have been the planned Chico River dam project in the Cordillera region in the northern Philippines which was shelved after successful resistance by indigenous peoples.[81]

As with the World Bank, the interest of the Zamora, Tan, Lopez and Aboitiz conglomerates in CDM projects does not appear to signal a shift away from environmentally degrading businesses towards less carbon-intensive pursuits. On the contrary, they appear to be increasing their investments in fossil fuels and extraction. Just after their Montalban project was registered, for example, the Zamoras and their Japanese partners were reported to be pressing forward with a $3-billion expansion of their Taganito nickel project in Surigao.[82] A late-comer to the mining industry, Tan's mining venture appears determined to catch-up with the frontrunners through a spate of exploration activities. The Lopezes are not only planning to acquire a 500 MW natural gas plant, they have also indicated their openness to investing in nuclear power. [83] The Aboitizes, for their part, are planning to add around 2,240 MW more of coal-fired power capacity to

77 Anna Kallet, "Clean Development Mechanisms: A Corporate Solution to Global Warming," unpublished paper; Heike Mainhardt-Gibbs, "World Bank Energy Sector Lending: Encouraging the World's Addiction to Fossil Fuels," Bank Information Center IFI Info Brief, February 2009, http://www.bicusa.org/admin/Document.100733.aspx (accessed February 6, 2009); Janet Redman, "World Bank: Climate Profiteer," Sustainable Energy & Economy Network, April 2008, http://www.ips-dc.org/getfile.php?id=181 (accessed February 6, 2009).

78 Mainhardt-Gibbs, "World Bank still supporting carbon-intensive future"; Alena Mae S. Flores, "Lopez, DMCI eye Calaca," *Manila Standard Today*, April 28, 2006, http://www.manilastandardtoday.com/?page=business01_april28_2006 (accessed June 29, 2009); "Aboitiz power unit to bid for Masinloc coal plant," Inquirer, August 28, 2006, (accessed June 29, 2009); Rocel Felix, "Masinloc Power- AES bid for coal plant highest at $930 million, *Inquirer.net*, July 26, 2007 http://business.inquirer.net/money/breakingnews/view/20070726-78948/Masinloc_Power-AES_bid_for_coal_plant_highest_at_%24930M (accessed June 29, 2009); "Aboitiz, San Miguel join bid for Calaca," *ABS-CBN News Online Beta*, July 7, 2009, http://www.abs-cbnnews.com/business/07/07/09/4-groups-bid-calaca-psalm, (accessed June 29, 2009).

79 Jim Vallette, Daphne Wysham and Nadia Martizez, "A Wrong Turn from Rio: the World Bank's Road to Climate Catastrophe" Sustainable Energy and Environment Network, 2004, http://www.tni.org/reports/seen/rio.pdf (accessed February 6, 2009); United Nations Environment Program Risoe Centre on Energy, Climate and Sustainable Development (URC), "CDM/JI Pipeline Overview Page."

80 Gumisai Mutume, "World Bank Urged to Halt All Big Dam Projects," InterPress Service, November 16, 2000; World Commission on Dams.

81 See Walden Bello, David Kinley and Elaine Elinson, *Development Debacle: The World Bank in the Philippines* (San Francisco: Institute for Food and Development Policy/ Philippine Solidarity Network, 1982); Andrew Gray, "Development Protest: The World Bank, Indigenous Peoples and NGOs," in *The Struggle for Accountability: The World Bank, NGOs and Grassroots Movements*, eds. Jonathan A. Fox and L. Dave Brown, eds., (Cambridge, MA: MIT Press, 1998); Sally Swenson, "National Minorities," in *Philippines Reader: A History of Colonialism, Neocolonialism, Dictatorship and Resistance*, eds. Daniel B. Schirmer, Stephen Rosskamm Shalom (Boston: South End Press, 1987).

82 Othel V. Campos, "Sumitomo raises Surigao nickel project cost to $3b," *Manila Standard Today*, May 29, 2009, http://www.manilastandardtoday.com/?page=business3_may29_2009 (accessed February 6, 2009).

83 Amy Remo, "First Gen eyes new gas-fired plant," *Philippine Daily Inquirer*, May 27, 2009, http://business.inquirer.net/money/topstories/view/20090527-207482/First-Gen-eyes-new-gas-fired-plant (accessed February 6, 2009); Myrna N. Velasco, "First Gen keen to study nuclear power option," *Manila Bulletin*, June 21, 2007; First Gen's profile on the Philippine Stock Exchange website describes its subsidiaries as being involved in energy derived from, among other sources, "nuclear power" [Philippine Stock Exchange, "Listed Companies," http://www.pse.com.ph/html/ListedCompanies/listedcompanyinfo.jsp?securitySymbol=FGEN (accessed February 6, 2009)].

As word about the financial opportunities offered by the CDM spreads, more and more companies with extractive and fossil fuel-dependent backgrounds—given the concentration of interlocking interests in Philippine business—can be expected to avail of CDM opportunities in the future.

their energy portfolio, increasing fossil fuel's share in it to nearly 70%.[84]

In other words, these companies' decision to avail of carbon credits does not mean that the CDM is helping them turn away from businesses that promote climate change. What the CDM can in fact do is to improve their cash flow, enabling them to expand their operations in ways they deem to be profitable. As Aboitiz Power Corporation senior vice president for power generation Luis Miguel Aboitiz admitted, they do not pursue a project solely for carbon credits; these credits also provide additional revenues.[85]

And as these companies decide on how to invest their additional assets, increasing stockholder value can be expected to trump mitigating climate change. The CDM money that will get deposited into their bank account can therefore end up financing the building of more coal plants or the clearing of more forests for mines. As another Aboitiz official, senior vice-president and chief financial officer Stephen G. Paradies said, putting up a coal plant has proven to be more "economical" for their company than renewable energy projects.[86] Thus, even as the Aboitiz group accepts the cash for "reducing" emissions, they will also use it to try to make even more money by increasing emissions, which gives their own CDM projects more fossil fuels to "displace," thereby earning even more money to further increase emissions.

The names above have been singled out because they earn a larger share of the CDM credits and their corporate footprints are more recognizable than others. But as some of the CDM participants are not publicly listed companies and even the investors in publicly listed companies are not all publicly disclosed, the information provided here is by no means exhaustive. Also, the current CDM project developers may have other investments that are known only to themselves; there may be other CDM project owners that are similarly carbon-intensive that have not been identified here.

But as word about the financial opportunities offered by the CDM spreads, more and more companies with these extractive and fossil fuel-dependent backgrounds—given the concentration of interlocking interests in Philippine business—can be expected to avail of CDM opportunities in the future.

84 "Aboitiz unit bids for Sual, Pagbilao power plants," *ABS-CBN News Online Beta*, January 21, 2009, http://www.abs-cbnnews.com/business/01/21/09/aboitiz-unit-bids-sual-pagbilao-power-plants (accessed February 6, 2009); Donnabelle Gatdula, "Aboitiz Power to double capacity by 2011," *The Philippine Star*, April 17, 2009, http://www.philstar.com/Article.aspx?articleId=458252&publicationSubCategoryId=66 (accessed February 6, 2009); "Aboitiz Power's Proposed 300MW Coal-Fired Plant in Philippines Remains Suspended," *Energy Business Review*, May 25, 2009, http://www.energy-business-review.com/news/aboitiz_powers_proposed_300_mw_coalfired_plant_in_philippines_remains_suspended_090525 (accessed February 6, 2009).

85 Ava Kashima K. Austria, "Carbon trading tagged as band-aid solution," *GMANews.TV*, September 15, 2008, http://www.gmanews.tv/story/120338/Carbon-trading-tagged-as-band-aid-solution (accessed February 6, 2009).

86 Ava Kashima K. Austria, "Aboitiz Equity eyes first quarter of 2010 for coal-fired power plant," *GMANews.TV*, February 24, 2009, http://www.gmanews.tv/story/150072/Aboitiz-Equity-eyes-first-quarter-of-2010-for-coal-fired-power-plant (accessed February 6, 2009)

Profiting from failure

For all the billions of pesos that the CDM is providing to these corporations, the supposed emissions "reductions" they promise may actually be more effectively achieved and even surpassed by concerted government and community action.

Almost all of the CDM projects, in order to prove that their projects would not have happened without the CDM, claim that the "baseline"—or the alternative scenario that would happen without their project—is one in which the government would continue to be incapable of implementing its own environmental laws or of introducing new required regulation. A review of their registration documents, which include detailed arguments seeking to convince CDM officials that they deserve credit, reveal a common underlying assumption: government failure.

For example, the Montalban landfill gas project's "baseline" is one in which the Solid Waste Management Act of 2001 or Republic Act 9003 will remain unenforced. As mentioned earlier, this law requires garbage segregation at source and recycling at the village level, as well as the development of outlets for composting and recycled materials. The aim is to reduce solid waste by 25%—a goal that was made even more ambitious by a subsequent presidential order to increase the target to 50%.[1]

Passed in the wake of a worsening garbage crisis and in the aftermath of a tragic "trash-slide" in an open dump which buried over 200 waste-pickers, the law ordered the closure of all open dumps, their conversion into "controlled landfills," and their eventual replacement with "sanitary landfills" that comply with a minimum set of requirements. Among these is the installation of a "gas control and recovery system" for capturing any residual methane.[2]

Contrary to the law's intent, however, Montalban's owners claim that the volume of garbage will neither be reduced nor will its methane be captured. Composting is dismissed as much more expensive compared to landfills without any supporting calculations (that includes the relative environmental and social costs of landfilling) and without pointing out that the law calls precisely for the development of local compost markets and supply chains in order to make it more commercially viable. Dismissing the alternatives, Montalban's owners predict that even more trash will be collected.[3]

Though the Montalban project's developers neglect to point this out, the landfill's very existence may itself reinforce their point about the law's non-implementation. As local residents and environmentalists have pointed out, the construction of the landfill contradicted various environmental laws and regulations. For one, the landfill is located in a watershed— in violation of the law's provision barring the construction of landfills in "environmentally sensitive resources such as aquifer, groundwater reservoir or watershed area."[4] (See **Sidebar 1: 'Perpetuating an unwelcome dump'**)

Incidentally, the "gas control and recovery system" that Montalban is installing and claiming credits for seems to be the kind of system that should

1 Reorganizing the Presidential Task Force on Climate Change, Executive Order No. 744, December 26, 2008; Government of the Republic of the Philippines, *2004-2010 Medium Term Philippine Development Plan* (Makati City: NEDA, 2004), 54, http://www.neda.gov.ph/ads/mtpdp/MTPDP2004-2010/PDF/MTPDP2004-2010.html (accessed February 7, 2009).

2 An Act Providing for an Ecological Solid Waste Management Program, Creating the Necessary Institutional Mechanisms and Incentives, Declaring Certain Acts Prohibited and Providing Penalties, Appropriating Funds Therefor and for Other Purposes, Republic Act No. 9003, January 26, 2001.

3 Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," 10-19.

4 Section 40 Article (e) of the law states: "The site must be located in an area where the landfill's operation will not detrimentally affect environmentally sensitive resources such as aquifer, groundwater reservoir or watershed area." An Act Providing for an Ecological Solid Waste Management Program, Creating the Necessary Institutional Mechanisms and Incentives, Declaring Certain Acts Prohibited and Providing Penalties, Appropriating Funds Therefor and for Other Purposes, Republic Act No. 9003, January 26, 2001.

A garbage truck, one of the hundreds that dump trash into the landfill daily, passes in front of the Montalban methane power plant, currently the largest CDM project in the country in terms of emission reduction credits to be earned. (By Sonny Yabao)

already have been installed under the law as a minimum requirement for the landfill to operate in the first place.[5] According to the Montalban project owners, however, the landfill chose not to install it because it is not "common practice." The project's registration document states: "Due to the lack of implementation of RA 9003, there is no pressure from the Philippine government that landfill sites capture landfill gas, thus it is unlikely that the Project Activity will be undertaken just to comply with Philippine legislation."

In other words, Montalban's owners are not only claiming that the law which the landfill may already be violating will not be implemented; they are also claiming rewards for simply complying with it. The implicit threat is that, if they are not given CDM money, they will simply continue violating it.

The same approach is taken by the Clark landfill gas project. Its proponents, however, go as far as to claim, citing supposed CDM authorities' decisions, that the law "*should not be taken into account* in the establishment of a baseline scenario" [italics added]. In other words, the Solid Waste Management Act should simply be regarded as irrelevant in drawing up future scenarios since it is not—and will not be—

5 Section 41 of the law requires the installation of a "gas control and recovery system" as part of the minimum criteria for establishing sanitary landfills. This is described as "a series of vertical wells or horizontal trenches containing permeable materials and perforated piping placed in the landfill to collect gas for treatment or productive use as an energy source." This is how Montalban's owners describe their system: "a modern landfill gas collection system, consisting of branch pipes, head pipes and extraction wells for effective collection of LFG." (An Act Providing for an Ecological Solid Waste Management Program, Creating the Necessary Institutional Mechanisms and Incentives, Declaring Certain Acts Prohibited and Providing Penalties, Appropriating Funds Therefor and for Other Purposes, Republic Act No. 9003, January 26, 2001; Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," 5)

Montalban's owners are not only claiming that the law which the landfill may already be violating will not be implemented; they are also claiming rewards for simply complying with it. The implicit threat is that, if they are not given CDM money, they will simply continue violating it.

implemented anyway. "Only laws that are enforced need to be considered," states the document.[6]

While the Quezon City project's owners recognize that there is indeed a requirement under the law for the installation of gas recovery systems, they claim that their project is not covered by it because said requirement refers only to "sanitary landfills" and not to "controlled landfills" like theirs.[7] What the owners neglect to say, however, is that under the law, "controlled landfills" are already supposed to have been phased out by February 2006 and replaced with sanitary landfills. In fact, the dumpsite where the Quezon City project is located was already ordered shut down in 2000 but was opened again only because more trash continues to be generated despite the law.

Like the Montalban landfill gas project, the cement projects described earlier not only claim that the law is not and will not be implemented; the legality of their own proposed operation may be in question. As mentioned earlier, incineration is banned under the Clean Air Act and yet the cement plants involved will burn tires and other hazardous wastes, while sugar mills and laundry facilities will burn crop residues, to fuel their operations. In other words, these projects may be claiming rewards not for complying with but for possibly violating the law.

For another set of projects, the claim is not so much that the government is unable to enforce regulation but that the required regulation has yet to be put in place. For example, a project to treat wastewater in Makati invokes the absence of a national standard for sewage wastewater treatment to claim that "business-as-usual" is the only possible alternative. It points out that while a National Program on Sewage and Septage Management is already being developed by the government, its guidelines still have to be published.[8] The assumption is that such a program will neither be finished nor its guidelines ever published.

In drawing their "baselines," the numerous swine wastewater treatment projects similarly assume that the government will continue to allow factory farms to continue disposing off their pigs' manure into open-air lagoons or into waterways. More than this, these projects also take it for granted that the government will continue to tolerate and welcome large-scale factory farms despite the large-scale pollution they bring. A program to promote organic, sustainable livestock as part of a larger agricultural transformation is not even contemplated.

Indeed, most of the existing CDM projects assume not just that the government will be unable to enforce or improve its laws and regulations, it will also be incapable or unwilling to undertake proactive initiatives towards a more sustainable and less destructive development model.

For instance, the common underlying assumption of projects that produce energy, which collectively account for as much as 91% of all credits, is that the government will be incapable of transforming

6 Metro Clark Landfill Gas Capture System, "Project Design Document," 17, http://www.dnv.com/focus/climate_change/Upload/PDD%20METRO%20CLARK%20FINAL%20as%20sent%20for%20VALIDATION%20NOVEMBER%2014%202007%20revised%2012%2021%2007%20tk.pdf (accessed February 2, 2009).

7 Quezon City Controlled Disposal Facility Biogas Emission Reduction Project, "Project Design Document," 11.

8 Makati South Sewage Treatment Plant Upgrade with On-Site Power, "Project Design Document," 14, http://cdm.unfccc.int/UserManagement/FileStorage/6OXT0T0ICF9J4BYTPBRPIKCNCLIJXW (accessed February 2, 2009).

TABLE 21
Power Capacity of CDM Projects that Produce Electricity

	Name of project	Power Capacity (in MW)	Reductions' as % of total
1	Hedcor Sibulan 42.5 MW Hydroelectric Power Project	42.5	5.5%
2	NorthWind Bangui Bay Project	33.0	3.3%
3	First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	21.0	6.9%
4	20 MW Nasulo Geothermal Project	20.0	4.3%
5	Philippine Sinter Corporation Sinter Cooler Waste Heat Recovery Power Generation Project	18.6	5.1%
6	Biomass Boiler Project in the Philippines	16.7	1.1%
7	Montalban Landfill Methane Recovery and Power Generation Project	15.0	48.6%
8	San Carlos Renewable Energy Project	8.0	2.2%
9	Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	1.0	0.3%
10	Quezon City Controlled Disposal Facility Biogas Emission Reduction Project	0.7	9.6%
11	Makati South Sewage Treatment Plant Upgrade with On-Site Power	0.4	1.7%
12	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2003)	0.3	0.5%
13	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1001)	0.2	0.3%
14	Paramount Integrated Corporation Methane Recovery and Electricity Generation	0.2	0.4%
15	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1005)	0.1	0.4%
16	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1002)	0.1	0.4%
17	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2004)	0.1	0.3%
18	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Project (ADSW RP2001)	0.1	0.1%
19	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2008)	0.1	0.1%
	Total	178.1	91%

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009).

the country's energy infrastructure. (**See Table 21: Power Capacity of CDM Projects that Produce Electricity**) These projects claim credits for supposedly "displacing" fossil fuel by generating a combined total of 178 MW of "renewable" energy, part of which goes to the national grid, while the rest is used for the project owners' own consumption.

Take for example the Hedcor Sibulan Hydropower Project, which has the largest power generation capacity at 42.5 MW. To calculate its claimed emissions "reductions," Hedcor's developers use 2004 data on fossil fuel consumption and total generation from the National Power Corporation to estimate "baseline" projections. The equivalent emissions of the power generated from the Hedcor project is then claimed as the total reductions to be achieved by the project. The assumption is that, without the hydropower project, the only alternative is for electricity to be generated through the current Mindanao grid, 43% of which comes from fossil fuel sources.

Ironically, as noted earlier, up to 60% of this comes from fossil fuel-powered plants owned by Hedcor's developer, the Aboitiz group, itself. The 43.5 MW that will be "displaced" by Hedcor accounts for just 6% of the total fossil fuel-powered electricity the Aboitizes currently produce—a figure that drops

Most of the existing CDM projects assume not just that the government will be unable to enforce or improve its laws and regulations, it will also be incapable or unwilling to undertake proactive initiatives towards a more sustainable and less destructive development model.

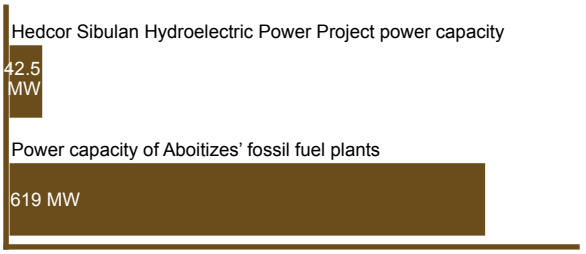
to just 1% if the Aboitizes' plans for an additional 2,240 MW from coal plants push through. (**See Figure 32: Power capacity of Aboitiz CDM project and power capacity of Aboitiz fossil fuel-powered plants**)

Similarly, the Montalban landfill project which will produce up to 15MW of electricity, claims that it would "displace" part of the 42% of electricity that came from fossil fuel sources, according to 2006 official power generation data from the Department of Energy.[9] To calculate its supposed reductions for the next ten years, it deducts the landfill project's emissions from what would otherwise have been emitted by the existing grid in 2006 without the project.

Other projects that claim to displace grid-produced electricity rely on similar calculations. Behind all of them is the assumption that the government—and the political forces that affect it, including civil society—will not and could not enact the required policies to steer the economy away from its current path of deepening fossil-fuel dependence. In all of them, potentially significant departures from the current fossil fuel-dominated energy mix—say, through a comprehensive and ambitious national renewable energy program crafted through enlightened legislation and propelled by popular pressure—is simply ruled out as impossible without convincing explanation, as though it were beyond question. The projects' chosen baselines—"business-as-usual" fossil fuel-intensive energy use—can be the one and only future.

Such reasoning logically flows from the CDM's methodology. As explained earlier, in order to compute the amount of "reductions"—and therefore the amount of revenues—the CDM gives project developers the power to define and choose the "baseline" scenario that would supposedly happen without the project. Given the intrinsic difficulty in predicting the future, such choices are less technical than political.

FIGURE 32
Power capacity of Aboitiz CDM project and power capacity of Aboitiz fossil fuel-powered plants



Source: Hedcor Sibulan 42.5 MW Hydroelectric Power Project, "Project Design Document," p.33, http://cdm.unfccc.int/UserManagement/FileStorage/C29D5CI593GAN0JBV0RTFVQM9UHMET [Accessed 4 February 2009]; Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008

Demonstrating either a lack of imagination or a propensity for gaming the system, project developers invariably choose the scenario that would maximize revenues. After all, a scenario in which a country is assumed to consume even more coal or produce even more waste is more profitable than when it is assumed to be doing the opposite. Government failure is more lucrative than government action. In short, the worst possible scenarios from an environmental and social perspective are often the best for the CDM developer.

While this method may be profitable for those who earn from the CDM, whether it is realistic is a different question altogether.

Take for example the assumption that better solid waste management cannot be achieved. That the Solid Waste Management Act has yet to meet its stated aims is undisputed: mandatory segregation

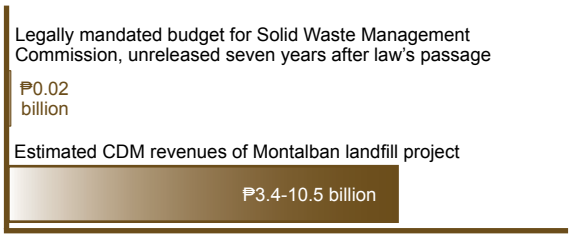
9 Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," 18.

is hardly enforced and government-led recycling is rarely practiced except in small pockets of villages.[10] According to the government agency tasked to enforce the law, over a thousand open and controlled dumpsites in the country remained operational as of 2007.[11]

While there are many reasons behind this, a central explanation lies in the fact that, eight years since it was passed, not a single centavo of the required funds for the law has been disbursed. The commission tasked to implement the law has in fact been borrowing its personnel and office space from the larger environmental agency to which said commission has been attached.[12]

A civil society representative who sits in the commission, Dr Metodio Palaypay of the Zero Waste Recycling Movement, claims that this may not just be due to a lack of funds.[13] Indeed, the ₱20 million initial funding that should have been allocated under the law is less than 2% of what Metro Manila spends annually to dispose its waste. Instead, Dr Palaypay draws attention to the inherent conflict of interest besetting waste management in the country today: the local governments that are mandated to reduce waste collection and close landfills also earn, officially or unofficially, from increasing waste collection and continued landfill operations.

FIGURE 33
CDM Revenues for Montalban Landfill Project compared to required budget for Solid Waste Management



Source: An Act Providing for an Ecological Solid Waste Management Program, Creating the Necessary Institutional Mechanisms, and Incentives, Declaring Certain Acts Prohibited and Providing Penalties, Appropriating Funds Therefor, and for Other Purposes, Republic Act No. 9003, January 26, 2001; For estimated revenues see Annex X: Calculation of Estimated CDM Revenues from the Philippines for details.

Indeed, the example of Rodriguez comes to mind: the municipality has received close to a billion pesos over the last 6 years from the Montalban landfill, with the mayor himself accused of pocketing the funds (See **Sidebar 1: 'Perpetuating an unwelcome dump'**). Palaypay therefore raises the possibility that local government units, as tolerated by the national government, may be deliberately sabotaging the law because it threatens their share in the lucrative waste disposal industry.[14]

But while intractable, these problems are not necessarily insoluble. To begin with, it is not that there are no resources to make the law work: The ₱4.4 billion to ₱13.6 billion that the Zamoras stand to earn from the Montalban landfill project, for example, is between 220 to 680 times larger than what the government should have allocated to the Solid Waste Management Act on its first year of implementation but never did (P20 million) and nearly a tenth of what is required annually to make the law work nationwide, according to one estimate.[15] (**Figure 33: CDM Revenues for Montalban Landfill Project compared to**

10 Interview with Dr. Metodio Palaypay, member of the National Solid Waste Commission, June 11, 2009; Asian Development Bank, *The Garbage Book: Solid Waste Management in Metro Manila*, 78; Zenaida M. Sumalde, "Implementation and Financing of Solid Waste Management in The Philippines," *Economy and Environment Program For Southeast Asia Research Report No. 2005-Rr1*, 47-48;50, http://www.idrc.ca/uploads/user-S/11201049121ZenyRR1.pdf (accessed February 2, 2009); Nora O. Gamolo, "Govt Wavers On Waste Management," Manila Times, October 31, 2007; Nora Gamolo, "Solid Waste Commission Lacks Funding," Manila Times, November 1, 2007; Alcuin Papa, "DENR: Improper Waste Disposal Still Rampant," *Philippine Daily Inquirer*, June 28, 2009, http://newsinfo.inquirer.net/inquirerheadlines/nation/view/20090628-212790/DENR:_Improper_waste_disposal_still_rampant (accessed June 29, 2009).

11 National Solid Waste Management Commission, "Solid Waste Inventory of the Philippines as of 1st Quarter Updates," 2007.

12 *Ibid.*

13 *Ibid.*

14 *Ibid.*

15 According to the World Bank, "A back-of-the-envelope analysis indicates that the Philippines will need to spend an additional Php150 billion ($3billion) over the next 10 years for solid waste management." [World Bank, *Philippines Environment Monitor 2001: Solid Waste*, December 2001, 2, http://siteresources.worldbank.org/INTEASTASIAPACIFIC/Resources/Philippines2001.pdf (accessed February 7, 2009)].

required budget for Solid Waste Management) Rather than an absence of funds, what stands to happen is that funds, coming from the carbon market, will go to a different set of actors for another purpose outside the government's control.

Besides allocating the required funds, local government officials who profit from failing to perform their duty could be sanctioned while ones able to succeed could be rewarded—the opposite of what is currently happening. More could and should be done; the point is that waste reduction and recycling are not as impossible as the CDM developers claim it to be. Indeed, local communities, environmentalists and other non-government organizations, as well as the waste-pickers and recyclers—none of whom are rewarded by the CDM—are pressing on with their waste reduction efforts despite the obstacles posed by local governments and private interests profiting from waste.

If the law's goals are ever achieved and these community and civil society efforts multiply, there would be much less solid waste to be collected and much less methane to be generated in landfills. The emissions reductions from this will conceivably exceed the reductions claimed by the CDM projects, for reasons discussed earlier, with the added benefit of preventing local environmental and public health damage caused by landfill operations.

The same goes for "displacing" fossil fuels with renewable sources of energy.

As with the solid waste problem, the government has, in fact, set ambitious targets aimed at promoting renewable energy. In the last few decades, the government has passed a succession of measures and policies towards this goal.[16] As early as 1992, the law creating the Department of Energy (DOE) mandated it to develop energy "with preferential bias for environment friendly resources."[17] In 2004—or before the CDM even became operational—the government's national planning document, the Medium Term Philippine Development Plan (MTPDP), announced the country's ambition to be the world's largest geothermal energy producer, and to be Southeast Asia's largest producer of wind energy and its solar technology hub.[18]

As part of a larger drive to increase energy supply by a total of 5,450 MW, the government planned to install about 417 MW of wind power projects, to double generating capacity from run-of-river hydropower projects, and to increase biomass, solar and ocean power capacity by 131 MW by 2013.[19] The objective is for renewable energy to meet up to 40% of the country's energy needs in ten years.[20]

And yet, by April 2009 or more than halfway through the target period, these goals remain far from being achieved. Of all new capacity installed since 2004, only 25 MW comes from wind (Ilocos) and 1 MW (Cagayan de Oro) comes from solar power—or just 6% and 0.8% of the respective government targets for these power sources. This, even as 232 MW in coal power (Misamis Oriental) and 355 MW (Laguna) in large hydropower were added to the grid. (**Figure 34: Target vs Actual Renewable Energy Capacity in the National Grid**) Thus far, small hydroelectric, solar and wind constitute only 0.6% of total dependable capacity; with geothermal power accounting for 11%. Two-thirds of the 13,200 MW total installed capacity still comes from fossil fuel power plants. (See **Table 22: Philippines' Power Sources; Figure 35: Philippines' Power Sources**)

This evident failure to accelerate renewable energy development can be explained by many factors.

In the first place, whether any significant additional energy capacity – from renewable energy or otherwise – is actually required has been put in

16 These include Executive Order 232/462: The Ocean, Solar and Wind Law; Presidential Decree 1441: An Act to Promote the Exploration and Development of Geothermal Resources; Republic Act No. 7156: On Mini-Hydro; Republic Act No. 9337; Executive Order 226: The Board of Investments Incentive Act.

17 An Act Creating the Department of Energy, Republic Act No. 7638, December 9, 1992, http://www.doe.gov.ph/popup/RA%207638.pdf (accessed February 2, 2009).

18 Government of the Republic of the Philippines, *2004-2010 Medium Term Philippine Development Plan*, 120.

19 Government of the Republic of the Philippines, *2004-2010 Medium Term Philippine Development Plan*, 121-122;130.

20 Department of Energy, "*Renewable Energy*," http://www.doe.gov.ph/er/renenergy.htm (accessed February 7, 2009).

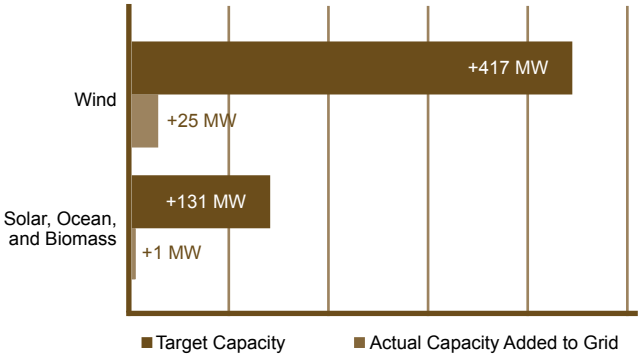
The worst possible scenarios from an environmental and social perspective are often the best for the CDM developer.

TABLE 22
Philippines' Power Sources

Sources	in MW	as % of Total
Fossil fuels	8,847	67%
Geothermal	1,400	11%
Large Hydroelectric	2,895	22%
Small Hydroelectric	53	0.4%
Solar	1	0.1%
Wind	9	0.1%
TOTAL	13,205	100%

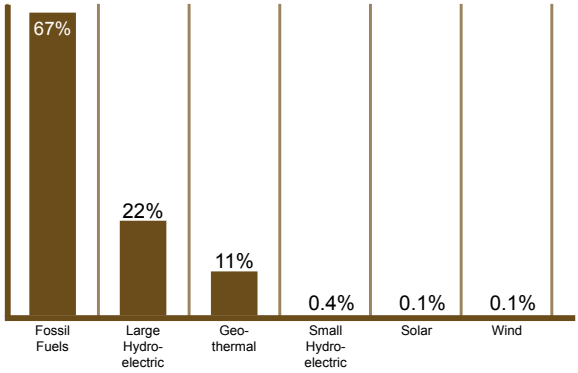
Source: Dark Power Rising/Freedom from Debt Coalition, "From state monopoly to de facto electricity oligarchy: A Study of the development of privatization of NPC assets," November 2008)

FIGURE 34
Target and Actual Renewable Energy Capacity in the National Grid



Source: Government of the Republic of the Philippines, *2004-2010 Medium Term Philippine Development Plan*, 2004, pp. 121-122, 130, http://www.neda.gov.ph/ads/mtpdp/MTPDP2004-2010/PDF/MTPDP2004-2010.html (accessed February 7, 2009).

FIGURE 35
Philippines' Power Sources (2004)



Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

question. A Worldwide Fund for Nature (WWF) study looked systematically into the basis of the government's projections, which guide the plans informing decisions to invest in additional power infrastructure. It found that there has been significantly more capacity than demand from 1990-2001, meaning more power plants were built than were necessary. Projections are likewise "significantly overestimating" future demand, meaning even more power plants may be built than necessary.[21] (**Figure 36: Discrepancy between Power Capacity and Demand, according to WWF Study**)

Thus, if the governments' projections of energy needs are actually overblown, then adding more renewable energy capacity has to entail decommissioning existing fossil fuel-powered plants or rolling back plans for more such plants—something the government and the private power producers are unlikely to agree to given the large investments involved. Otherwise, installing more renewable energy sources will only worsen the oversupply instead of reducing emissions.

And this, in fact, appears to be the main problem: renewable energy is being promoted to increase supply, not to reduce fossil fuel dependence. As the MTPDP makes clear, the ultimate goal behind the government's renewable energy targets is actually to lower the price of electricity, currently the most expensive in Asia and believed by many to be repelling foreign investments.[22] The hope is that by

21 Maitet Diokno-Pascual, "Philippine Electricity Demand Projections: an analysis of the demand-forecasting model used by the Department of Energy and its implications for new investment," World Wildlife Fund, 1994, http://www.powerswitch.org.ph/downloads/wwf_demand_study.pdf (accessed February 7, 2009).

22 Jess Diaz, "RP Power Cost Highest In Asia," *The Philippine Star*, July 1, 2009, http://www.philstar.com/Article.aspx?articleId=482543&publicationSubCategoryId=66 (accessed February 7, 2009).

FIGURE 36
Discrepancy between Government's Projected Demand for Electricity and Actual Demand (1992-2002), according to Worldwide Fund for Nature Study

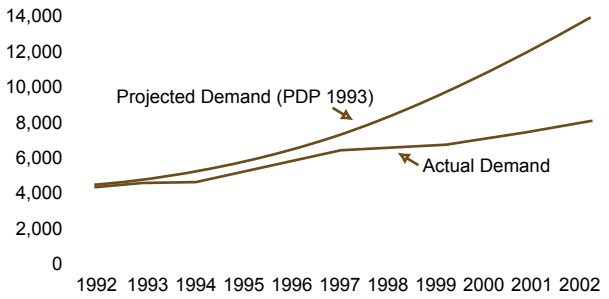


Chart taken from Maitet Diokno-Pascual, "Philippine Electricity Demand Projections: an analysis of the demand-forecasting model used by the Department of Energy and its implications for new investment," World Wildlife Fund, 1994, http://www.powerswitch.org.ph/downloads/wwf_demand_study.pdf (accessed February 7, 2009).

increasing energy supply (rather than addressing private oligopolistic control of the industry), high power rates could be brought down, thereby attracting investment, and spurring economic growth. A concurrent goal is to achieve "energy independence" so as to break the country's reliance on imported fossil fuels, lessen the need for foreign currency, and reduce exposure to global market price volatility.[23]

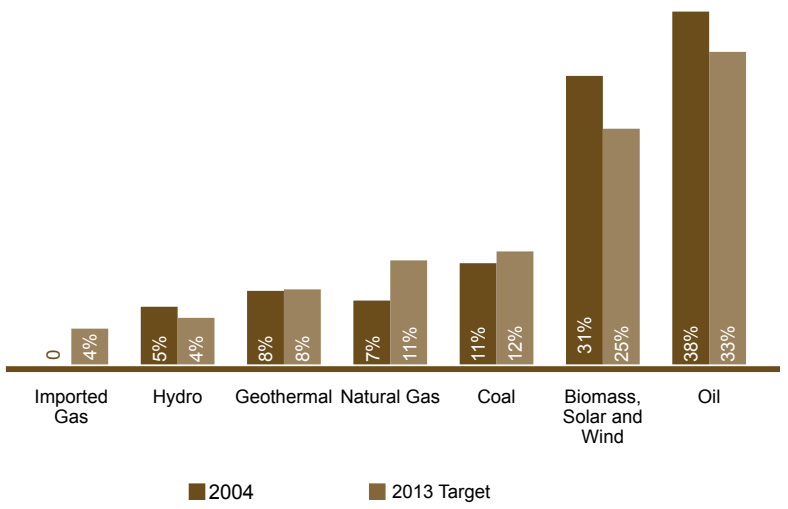
As such, whatever will contribute to achieving these larger goals will be pursued; the question of sustainability is secondary. Whatever will bring the government closer to its to 5,450 MW target by 2014 is to be promoted; whether each extra megawatt comes from coal or wind matters less. Indeed, even as the government adopted ambitious targets for renewable sources of energy, it actually set even more ambitious targets for fossil fuels.

While renewable energy is targeted to increase in absolute terms, its relative share vis-à-vis other sources is actually expected to decline further, from 31% in 2004 to 25% in 2013.[24] The share of local coal, oil, and natural gas, on the other hand, is expected to jump by 8%. Over-all, the government

23 Government of the Republic of the Philippines, *2004-2010 Medium Term Philippine Development Plan.*

24 Department of Energy, "Philippine Energy Plan 2004-2013," 2004, www.doe.gov.ph/PEP/PEP_2004_2013.pdf (accessed June 29, 2009)

FIGURE 37
Government's Projected Energy Mix, 2004 and 2013



Source: Department of Energy, "Philippine Energy Plan 2004-2013," 2004, www.doe.gov.ph/PEP/PEP_2004_2013.pdf (accessed June 29, 2009).

is actually turning to domestic (as opposed to imported) fossil fuel much more than it is turning to renewables. (**Figure 37: Government's Projected Energy Mix, 2004 and 2013**)

From this, it can be seen that the additional renewable energy capacity targeted by the government is not actually meant to "displace" fossil fuels but to augment them so as to increase total energy supply. In fact, if renewables' share vis-à-vis fossil fuels is actually declining as a result of growing reliance on fossil fuels, it could be said that it is actually fossil fuel-based energy that is "displacing" renewable energy.

In light of this, the extra megawatts supplied into the grid by the CDM projects are actually supplementing—not "displacing —fossil fuel use; their capacity goes to the energy supply on top of and not in lieu of fossil fuels. Subordinated as it is to the goal of increasing total energy supply, increasing renewable energy is therefore not seen as necessarily incompatible with increasing fossil fuel use. The result is that the over-all energy mix remains and will remain dominated by fossil fuels.

Further contributing to the government's failure has been its preferred approach towards promoting renewable energy: pass the task on to the private sector. Since 2001, following World Bank and Asian Development Bank loan conditions, the government has been dismantling and bequeathing its erstwhile monopoly in energy generation to private companies on the claim that this would bolster competition, attract more investments, increase energy supply, and lower power rates.[25] Eight years later, not only are power rates the highest in Asia, control over the power industry has become concentrated in the hands of a few private companies that have since taken over the monopoly privileges previously enjoyed by the formerly publicly owned companies.[26]

Thus, even as the government set goals for renewable energy, it has also been giving up the power to pursue them. The result is that the government has found itself incapable of doing more than wait for these private companies to do what needs to be done in order to meet the country's energy goals. A new Renewable Energy Law passed

25 Peter Krinks, *The Economy of the Philippines* (London and New York: Routledge, 2002), 156; Nepomuceno Malaluan, "The Philippine Electric Power Industry Reform: A Tragedy of ADB and World Bank Private Sector Fundamentalism and Unaccountable Government," Action for Economic Reforms, October 28, 2002, http://www.focusweb.org/publications/2002/The-Philippine-Electric-Power-Industry-Reform.htm (accessed June 29, 2009).

26 Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: a study of the development of privatization of NPC assets."

The additional renewable energy capacity targeted by the government is not actually meant to "displace" fossil fuels but to augment them so as to increase total energy supply.

in January 2009 offers clean energy investors incentives through public funds such as tax breaks and other incentives (which represent foregone government revenues and expenditures).[27] At the same time, however, fossil fuel-based producers are also given fiscal perks.[28]

In the end, however, for all the incentives promised to them, it is still ultimately up to these private companies to decide whether or not to undertake the necessary investments to increase renewable energy, based on their own assessment of profitability and their larger corporate strategies. The government can do no more but hope that they will. If returns on fossil fuel projects are deemed to be higher, the government is powerless to compel private companies to invest in clean energy—or to do the job itself—even if doing so were more socially and environmentally beneficial.

Ironically, it is the government's abdication of its role in power generation which some CDM projects invoke to justify their supposed need for CDM money. For example, developers of the bagasse cogeneration plant CDM project in Negros Occidental complain that the government's privatization program has actually favored large natural gas or diesel power plants over small private generators. [29]

Similarly, the Nasulo Geothermal Project—as well as the Northern Negros Geothermal Project in Negros Occidental still undergoing registration—both claim that the government's privatization program has put them at a disadvantage vis-à-vis fossil fuel projects. This is because geothermal projects supposedly require more costly investments but they could no longer rely on concessional financing or cross-subsidies previously enjoyed by state-owned companies.[30]

As mentioned earlier, the Nasulo as well as the Northern Negros geothermal projects are being developed by the Philippine National Oil Company – Energy Development Corporation (PNOC-EDC), a formerly public company that was bought from the state by its current owners, the Lopezes, who now produce 25% of all fossil fuel-generated power in the country. In effect, the Lopezes are claiming damages from a privatization program which they have benefited from and asking compensation for lost benefits that would otherwise have been available had the firm not been privatized in the first place.

All these raise questions about the viability and sustainability of the current energy policy. While it seems entrenched, however, it is not as irrevocable as the CDM developers make it to be. If the single-minded pursuit of more fossil fuel energy and the concomitant preference for weakening the role of the state in the energy sector is preventing the required transition towards sustainability, there appears to be no reason why said model cannot be reviewed, debated, and recast, in light of the gravity of the climate change challenge.

In this debate, a key question would revolve around the role of the state: Changing the country's energy infrastructure is a difficult task that requires the active leadership of and coordination by an accountable body that prioritizes larger collective welfare over narrow short-term interests, and that has the legitimacy, authority, and resources to

27 Renewable Energy Act of 2008, Republic Act 9531, December 17, 2008.

28 Athena Peralta, "Gender and Climate Change Finance: a case study from the Philippines," Women's Environment and Development Organization and the Heinrich Boell Foundation, 2008, 9, http://www.wedo.org/prototype/wp-content/uploads/genderandclimatechangefinance.pdf (accessed June 29, 2009).

29 First Farmers Holding Corporation Bagasse Cogeneration Plant, "Project Design Document," 14, http://cdm.unfccc.int/UserManagement/FileStorage/USBIRW8KEMD9CQJOZ1NYT62XHPLAV4 (accessed February 3, 2009).

30 Nasulo Geothermal Project, "Project Design Document," 14-17, http://cdm.unfccc.int/UserManagement/FileStorage/ITT4XCO6F4KVVAYAE1IB3TVPNRF3QX (accessed February 3, 2009); Northern Negros Geothermal Project, "Project Design Document," 12-14, http://www.dnv.com/focus/climate_change/Upload/Final%20PDD%20NNegros%2020%20October%202006.pdf (accessed February 3, 2009).

Even as the government set goals for renewable energy, it has also been giving up the power to pursue them.

undertake the required measures to transition away from deepening fossil fuel dependence.

Given the stakes involved, this task cannot be left in the hands of a few corporations whose decisions are ultimately guided more by the need to enhance shareholder value. As it is, these companies have evidently refused to undertake the required investments in renewable energy as shown by their continuing over-all preference for fossil fuels. Coal, as the Aboitiz official said, is still much more profitable and will continue to be preferred if it were up to the Aboitizes.[31]

In light of this, the claim that the government is incapable of and should not be pressed to do better cannot be taken for granted. The government's own record at environmental stewardship may not inspire credibility: indeed, by commission or omission, it has supported and colluded with private interests in destroying the environment.[32] But while there is reason to expect the worst from it, the implication—that government should neither be expected nor pushed to change and that the private sector should just be given the money to do the job instead—is questionable, as the mixed record of performance by public sector and private sector enterprises has shown through the years. The opposite of government failure is not always private sector success.

In reviewing the role of the government in transforming the country's energy policy framework, increasing fossil fuel use does not have to be accepted as the only inexorable future. Indeed, communities and civil society organizations have shown that they can manage sustainable livelihoods and industries without requiring excessive energy intensity to meet needs; environmentalist groups have also demonstrated that development can be achieved without relying on fossil fuels. But their practices and demands have been undermined by the government's commitment to centralized fossil fuel dependence and its deference to the fossil fuel-based power companies.

One alternative among many is for the government itself to take the lead by embarking on a comprehensive national program that will alter the energy infrastructure in such a way as to reduce fossil fuel's share in the energy mix in both absolute and relative terms, rather than just increasing total energy supply, as is the current goal. Pushed and held accountable by communities and civil society, the government's program can involve both direct investments by the government, mixed with concessional funding and incentives, for decentralized community-owned and controlled renewable energy projects that displace rather than just augment fossil fuel power.

This ambitious but necessary program can be partially funded out of the reparations being demanded from rich countries for the ecological damage they have inflicted on developing countries. As mentioned earlier, developed countries have contributed the most to climate change, but developing countries stand to suffer more. According to the best scientific estimate to date, in the last four decades alone (or without considering the period of direct colonialism), developed countries have wreaked environmental damage on poorer countries worth US$2.3 trillion—more than the latter's current foreign debt but less than a tenth of the current size of developed countries' economies.[33]

This estimate can be seen as providing an initial and partial financial valuation of the rich countries'

31 Ava Kashima K. Austria, "Aboitiz Equity eyes first quarter of 2010 for coal-fired power plant," *GMANews.TV*, February 24, 2009.

32 Peter Krinks, *The Economy of the Philippines* (London and New York: Routledge, 2002), 90.

33 U. Thara Srinivasan, Susan P. Carey, Eric Hallstein, Paul A. T. Higgins, Amber C. Kerr, Laura E. Koteen, Adam B. Smith, Reg Watson, John Harte and Richard B. Norgaard, "The Debt of Nations and the Distribution of Ecological Impacts from Human Activities," *Proceedings of the National Academy of Sciences* 105, no.5 (2008), 1768–1773, http://www.pnas.org/content/105/5/1768.full.pdf+html (accessed June 29, 2009); Size of Annex 1 countries' economies stood at $34 trillion in 2000 [World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*].

"ecological debt" to developing countries.[34] Assuming without proposing that said amount would be divided among developing countries by population, then the Philippines stands to be compensated with around $40 billion or around ₱1.8 trillion pesos—equivalent to around a quarter of the country's gross domestic product in 2008 and over 100 times what the CDM projects in the Philippines stand to earn over their crediting period.[35] (See **Annex 3: Calculation of Estimates of Potential Funds from Ecological Debt, Adaptation and Mitigation, CDM Adaptation Funds, and Government Funding Requirements**)

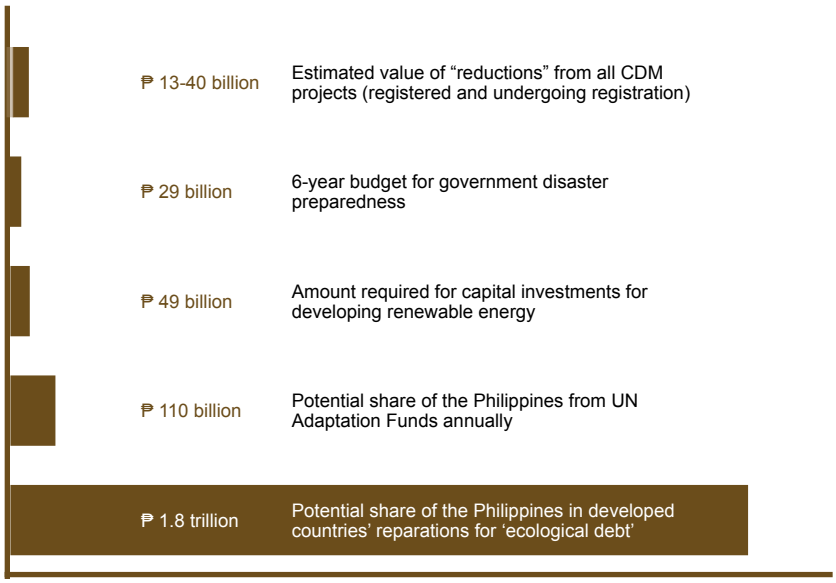
Under the UN Framework Convention on Climate Change, developed countries have committed themselves, in recognition of their historic responsibility for causing climate change, to provide developed countries with funds for mitigating as well as adapting to climate change. According to various estimates, in terms of adaptation funds alone, developed countries will need up to $135 billion a year.[36]

34 According to Erik Paredis, *et al.*: "The ecological debt of country A consists of (1) the ecological damage caused over time by country A in other countries or in an area under jurisdiction of another country through its production and consumption patterns and/or (2) the ecological damage caused over time by country A to ecosystems beyond national jurisdiction through its consumption and production patterns and/or (3) the exploitation or use of ecosystems and ecosystem goods and services over time by country A at the expense of the equitable rights to these ecosystems and ecosystem goods and services by other countries or individuals." [Erik Paredis, Jesse Lambrecht, Gert Goeminne, Wouter Vanhove, "Elaboration of the Concept of Ecological Debt," Center for Sustainable Development-Ghent University, September 2004, 6, http://www.ecologicaldebt.org/documentos/alianza%20de%20acreedores/Gent_concept_ecodebt.pdf (accessed June 29, 2009)].

35 International Monetary Fund, "World Economic Outlook Database, April 2009: Nominal GDP list of countries. Data for the year 2008," http://www.imf.org/external/pubs/ft/weo/2009/01/weodata/index.aspx, (accessed June 29, 2009).

36 "Closing the Gaps: Disaster Risk Reduction and Adaptation to Climate Change in Developing Countries," Report of the Commission on Climate Change and Development, 2009, www.ccdcommission.org/Filer/report/CCD_REPORT.pdf (accessed June 29, 2009); Oxfam, "Adapting to Climate Change: What's Needed in Poor Countries and Who Should Pay," *Oxfam Briefing Paper*, May 29, 2007, www.oxfam.org.au/.../climate-change/.../adapting-to-climate-change.pdf (accessed June 29, 2009); Christian Aid, "Global War Chest needed to fight impact of climate change on the poor," April 6, 2007.

FIGURE 38
Potential Funds from Ecological Debt Reparations, Adaptation and Mitigation, CDM Adaptation Funds, and Government Funding Requirements



See Annex 3: Calculation of Estimates of Potential Funds from Ecological Debt, Adaptation and Mitigation, CDM Adaptation Funds, and Government Funding Requirements

Assuming again for the sake of estimation that this would be divided by population, this could translate to around $2.3 billion or ₱110 billion annually for the Philippines—or around 50 times that of all CDM revenues to be earned in the Philippines annually so far. (See **Annex 1: Calculation of Estimated CDM Revenues from the Philippines**) This is over thrice the government's six-year budget ($603 million) for disaster preparedness such as flood control and drainage infrastructure.[37] And though this amount should be spent on adaptation, it frees up resources for other programs as well. At ₱110 billion, this is over twice the government's own projection of the total amount required for capital investments for developing renewable energy in the country (₱49 billion as of 1999).[38] (See **Figure 38: Potential Funds from Ecological Debt, Reparations, Adaptation and Mitigation, CDM Adaptation Funds, and Government Funding Requirements**)

Developed countries, however, have refused to meet their obligations, much less acknowledge their "ecological debt" to developing countries. As of 2007, they have pledged only $182 million for developing country adaptation[39]— or about 0.1% of what is required — and have insisted on giving developing countries little say in the control and use of the funds. The tiny adaptation fund that has been agreed upon so far will be drawn from 2% of all CDM revenues — or from the funds rich countries pay poor countries so that the rich can exceed their emission reduction commitments.

37 Rodel D. Lasco, Florencia B. Pulhin, Patricia Ann Jaranilla-Sanchez, Kristin Garcia and Roberta Gerpacio, "Mainstreaming Climate Change in the Philippines." *World Agroforestry Centre Working Paper* no. 62 (2008), 6, http://www.worldagroforestry.org/downloads/publications/PDFs/wp08034.pdf (accessed June 29, 2009).

38 "The Philippines Initial National Communication on Climate Change," December 1999, 24, unfccc.int/resource/docs/natc/phinc1.pdf (accessed June 29, 2009).

39 Oxfam, "Adapting to Climate Change: What's Needed in Poor Countries and Who Should Pay."

So far, this is estimated to amount to only around $80 million to $300 million per year and— as proceeds from the CDM—comes with the added consequence of allowing rich countries to increase their emissions beyond their caps.[40] It is therefore up to the government, in coalition with other developing countries, to press developed countries to meet their obligations under the UN agreements, and to demand reparations for their "ecological debt."

The feasibility of this plan will depend to a large extent on the actions of developing country governments and civil society in the ongoing climate change negotiations, as well as the actions of peoples and communities in the country. Whether these have any probability of succeeding—and how this probability can be increased—are questions that could be further studied and debated. But it cannot simply be dismissed as unrealistic, especially by parties such as CDM developers for whom defeatism is more profitable. To a large extent, whether this alternative is plausible at all depends on the determination of governments to push for it—a resolve that may be weakened by the CDM, as the next section explains.

40 For the period 2008-2012 [United Nations Framework Convention on Climate Change, *Investment And Financial Flows To Address Climate Change*, 8].

Preventing action

On the one hand, the CDM is further strengthening the hand of powerful local interests who already own a larger proportion of the assets and exert disproportionate political power in the country. As discussed above, the CDM's main beneficiaries in the Philippines include the country's richest individuals and families, who enjoy direct access to political power through their political connections or through their capacity to provide electoral advantage to officials by virtue of their wealth and influence. Increasing revenue flows increases their resource advantage vis-à-vis the government as well as the communities and civil society organizations that have been campaigning against their destructive practices.

Seeking to defend and benefit further from the lucrative business opportunities offered by the CDM, these giant conglomerates—along with smaller developers, consultants, and other beneficiaries of this booming new industry—can be expected to constitute a new political constituency that can be expected to support the CDM's perpetuation and expansion, block any moves against it, and oppose measures that may affect their ability to earn from it. It will be in their interest to attempt to undermine efforts to actually reduce waste or to decrease fossil fuel consumption, for example, as these may undermine their claim to "additionality." By further strengthening this constituency, the CDM has made it even more difficult to correct government failure.

On the other hand, the CDM is providing funds to the government, directly through the 2% levy for adaptation funds and a levy on the national CDM approval process, joint ventures and fees, and indirectly through taxes on company revenues, thus deepening the compatibility of its own interests with those of the CDM developers, and giving it reason to attempt to find ways to make the most of the scheme. As the World Bank notes, "The biggest contribution of CDM has been to capture the imagination and ingenuity of governments and companies in developing countries to view climate change mitigation as an opportunity instead of a constraint to growth."[1]

Indeed, a high-ranking government official dealing directly with the CDM approval process noted that while he is personally opposed to the CDM because it serves the interests of developed countries over developing countries', the Philippine government's attitude is just to take advantage of the financial opportunity the CDM offers since it is already in place anyway.[2] Besides, he said, since other countries are also jockeying for CDM credits, the government should also just seek as much CDM investments as possible rather than lose out to others. In fact, of the 60 projects that have sought national-level approval from the Philippine government to date,

1 Capoor and Ambrosi, 45.

2 While this official allowed his views to be expressed in this report, he refused to be cited by name for fear of bureaucratic repercussions. (Interview with government official involved in CDM national approval process, June 18, 2009).

Enforcing the law and easing the plight of communities negatively affected by landfills has become even more of a bad business proposition.

not a single project has been rejected.[3] Instead of rejecting projects over which they have questions or concerns, said this official, they return the papers back to the developers for corrections.

This drive to attract more CDM benefits has implications on the government's determination to improve its own environmental governance. It may affect its willingness to enforce existing laws, improve regulation, or undertake proactive initiatives that, as discussed above, can conceivably be more effective in reducing greenhouse gas emissions than the CDM projects but also have the consequence of undermining CDM projects' claims for credits.

As Anna Mae Tuazon, a researcher specializing in the CDM with the influential Asian Institute of Management, which has been conducting workshops promoting the scheme in the country, pointed out, "Our country is a very good candidate for CDM projects because most of our laws do not have strict mandates related to the use of clean technology; as such it is not very difficult to prove the additionality of CDM projects." But this should not necessarily be celebrated, Tuazon says, because it may in fact be a signal of the inadequacy of the country's policies.[4]

Despite this, Tuazon encourages taking advantage of the CDM, though only as a "temporary" measure. Since the CDM is envisioned to continue beyond the first 2008-2012 commitment period, however, it is not clear whether Tuazon advocates withdrawing from the scheme at some point in the future and on what conditions. She also discounts the impact of increasing CDM revenues on the government's willingness and capacity to actually correct the inadequacy of policies that she pointed out. Though still a trickle, CDM cash flows may eventually surge as more parties line up for its credits. That this may make the government even more hesitant to correct its own failings could not be ruled out.

3 *Ibid.*; Institute for Global Environmental Strategies, "CDM Country Factsheet: Philippines," May 2009 http://enviroscope.iges.or.jp/modules/envirolib/upload/984/attach/philippines_final.pdf (accessed June 29, 2009).

4 Anna Mae Tuazon, "Clean Development Mechanism: New Challenges for the Philippines," 20.

TABLE 23
Government's Potential Earnings from CDM

Potential Share from CDM Adaptation Fund (2% of estimated revenues from CDM projects in the country)	₱140-431 million
Additional tax revenues from electricity sales or savings made possible by CDM	variable
Laguna Lake Development Authority (LLDA) CDM project 1	₱25-75 million
Laguna Lake Development Authority (LLDA) CDM project 2	₱33-100 million
Rodriguez municipal government: estimated share in Montalban landfill project royalty fee	₱16-36 million
Rizal provincial government: estimated share in Montalban landfill project royalty fee	₱6-15 million
Quezon City city government: share in landfill project's CDM revenues *	₱700 million-2.1 billion
Quezon City city government: share in landfill project's electricity sales *	₱200 million

* fraction of amount, to be shared with CDM project joint venture partner

Sources: "Potential Share from CDM Adaptation Fund" is computed by taking 2% of estimated revenues from CDM projects in the country (₱13-40 billion) [See Annex 1: Calculation of Estimated CDM Revenues from the Philippines. For estimated government unit shares in estimated revenues, see specific Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009); For Rodriguez and Rizal shares, see Table 24: Estimated Share of 10% Royalty Fee from CDM Project.]

Though the national government does not tax revenues from carbon credits, it stands to get a share of the Adaptation Fund taken from 2% of all CDM revenues. If computed as a percentage of CDM revenues in the country, this can translate to between ₱140 million to ₱431 million in the coming years—far less than what it stands to receive if it and other governments succeed in receiving reparations for rich countries' "ecological debt," but more than nothing. On top of this, the government also receives fees from the national approval process for CDM projects seeking registration, as well as tax revenues from CDM projects selling electricity and from the increased income of companies that incur savings as a result of installing technology that comes as part of the CDM project. (See **Table 23: Government's Potential Earnings from CDM**)

Beyond the financial benefits, the national government sees the CDM as a tool to achieve its own larger goal of increasing energy supply. Indeed, the only mention of climate change in the government's 283-page national planning document, the Medium Term Philippine Development Plan, is in the context of the CDM as a financial opportunity that would be "advantageous" for achieving "energy independence."[5] As discussed earlier, this goal is driven by the desire to lower electricity prices to attract investments and ultimately treats renewable energy as an add-on to rather than as a replacement for fossil fuels.

Apart from generating funds for the national treasury, CDM revenues also go directly into at least one key ministry: the country's primary environmental regulatory authority and the authority that approves CDM projects at the national level, the Department of Environment and Natural Resources (DENR). One of the agencies attached to it, the Laguna Lake Development Authority (LLDA) is the sole project developer of the Laguna de Bay Community Waste Management Project. From this, the LLDA stands to earn between ₱25 million to ₱75 million, plus another ₱33 million to ₱100 million in case a second CDM project it is likewise developing

5 Lasco, *et al.*, 6; Peralta, 9; Government of the Republic of the Philippines, *2004-2010 Medium Term Philippine Development Plan*, 123.

gets registered. (See **Table 24: Estimated Share of 10% Royalty Fee from CDM Project**)

Besides the national government, local government units and agencies also stand to earn directly from the scheme. The Rodriguez municipal government and the Rizal provincial government, which exercise jurisdiction over the Montalban landfill, have been promised 10% in royalty fees by the landfill gas project developers in exchange for access to the landfill's waste and the landfill's continuing operation.

The agreement does not stipulate how said royalty fee is to be calculated, but assuming it is taken as a percentage of gross revenues, this could translate to an annual additional revenue stream of between ₱16 million to ₱36 million to the Rodriguez municipal government and between ₱6 million to ₱15 million to the Rizal provincial government—on top of the waste disposal fees that these government units earn from the landfill itself (See **Sidebar 1: Montalban landfill**). Similar sharing arrangements can be expected to be offered to the six other local governments where the Zamoras are also planning to develop landfill gas projects.

In the Quezon City landfill gas project, the local government does not just get royalty fees, it is actually a direct part of the joint venture with a private company that owns the project. As such, it stands to earn a portion of the ₱676 million to ₱2.1 billion that the project is expected to earn from the CDM credits, on top of ₱200 million in projected electricity sales.[6]

The inflow of additional cash provided by the CDM deepens the conflict-of-interest in which the national government and local government units find themselves with respect to waste reduction, as mentioned earlier: On the one hand, they are mandated to implement the country's Solid Waste Management Act which seeks to reduce waste by

TABLE 24
Estimated Share of 10% Royalty Fee from CDM Project

Party	%	Estimated annual equivalent
Rodriguez municipal government	21.25%	₱16-36 million
Rizal provincial government	8.75%	₱6-15 million
SWIMS (private landfill contractor)	70.00%	₱51-118 million

* Estimate using sharing arrangement stipulated in "Memorandum of Agreement between the Province of Rizal, the Municipality of Rodriguez and International Solid Waste Integrated Management Specialist" (June 4, 2007) and from revenue projections from Project Design Document, Montalban Landfill Methane Recovery and Power Generation Project, "Project Design Document," 66, http://cdm.unfccc.int/UserManagement/FileStorage/27401SFWYM3R65LTZDXJ89CGIEVKQU (accessed February 3, 2009) using exchange rate range of US$1=₱43.02 to ₱52.58.

6 The project expects to earn 389,803 Euros for 8 years. The equivalent amount in pesos is calculated using Euro 1=1.357 US$ exchange rate used by developers and the US$1=₱47.8 average exchange rate used throughout this report. [Quezon City Controlled Disposal Facility Biogas Emission Reduction Project, "Appendix 2 – BP Payatas IRR calculations," http://cdm.unfccc.int/UserManagement/FileStorage/04B4NOL8TPACGF30GPYDJTT9SKBWR5 (accessed February 4, 2009)].

segregation, composting and recycling. On the other hand, they also earn (officially or unofficially) from the fees paid for waste collection and disposal, with more waste bringing in more funds. Now, they can also count on additional revenues from CDM projects which likewise depend on more waste to be justifiable and viable. From the perspective of these government's bottom-lines, then, enforcing the law and easing the plight of communities negatively affected by landfills has become even more of a bad business proposition.

The same applies to other laws and regulations with environmental implications. As CDM revenues in the country grow, so will the so-called "perverse incentive" to not implement these laws or introduce required regulation. As has been observed in other countries, the CDM set-up can result in a "regulatory chill" in which government officials willingly give in to the lobbying of companies to fail intentionally: They may hesitate to implement or pass new laws affecting the CDM projects' ability to claim credits—not just for the sake of the companies but for themselves.[7]

These "perverse incentives" become even more pronounced in contexts like the Philippines, where government regulatory power has either been captured by, deliberately rendered ineffective, or dismantled altogether vis-à-vis dominant corporate interests as a result of privatization, liberalization, or deregulation programs.

Consider the goal of embarking on a new energy path. As explained earlier, renewable energy projects' CDM revenues are proportional to the degree of fossil fuel dependence in the country: the more fossil fuels a country currently uses, the more reductions a CDM project can claim, and therefore the more money it stands to make. In a context in which the government actually has the power to set the share of fossil fuels in the energy mix, it is government action that can reduce or increase the revenues to be earned by CDM developers.

In the case of the Philippines, however, where the parent companies of CDM developers also happen to be the most powerful players in an industry where the government's role is being diminished by design, the decision as to whether to invest in more or less fossil fuel capacity is largely up to the CDM developers themselves—not to the government. As it happens, these parent companies are intent on increasing their fossil fuel use, thereby also increasing their subsidiaries' ability to earn from the CDM.

In theory, CDM developers have to consider many exogenous factors over which they have no control as they choose and justify their "baseline" scenarios. To yield the highest plausible "reduction," they often choose the "business-as-usual" scenario which assumes that the worst current practices and trends will continue, as mentioned earlier. In the context of the deliberate weakening of the state's institutional capacities, however, the CDM developers involved may actually be powerful enough—and the government powerless enough—to affect the exogenous factors that determine their ability to claim "reductions." In this case, then, the chosen "business-as-usual" baselines can be self-fulfilling because the companies that set them may also actually have the power to decide what is business-as-usual.

As it is, the assumption of ineffective government is already the common claim on which most CDM projects' "additionality" stands—a claim which may end up being validated by the government's deliberate abdication of its role. The more that the government earns from the CDM, the more profitable this failure becomes—not just for the

The chosen "business-as-usual" baselines can be self-fulfilling because the companies that set them may also actually have the power to decide what is business-as-usual.

7 Bullock, Childs and Picken, 21; Schneider, 17; Lohmann, 148.

The CDM, as it is currently operationalized, allows developed countries to use their advantage in wealth to buy their way out of their emissions reductions commitments, in a scheme that their own corporations are likely to earn from, and in a way that leaves developing country governments with little power over the financial flows.

CDM developers but for the government itself. And since each CDM credit ultimately allows a polluting company in an industrialized country to exceed emissions caps, it could be said that continuing pollution in developed countries rests on further dismantling state capacities in developing countries—a process of regulatory diminution that has been made even more lucrative for some by the CDM.

The international scramble for CDM investments which developing countries have been forced into reinforces these incentives for ineffective government. Concerned by the competition posed by other developing countries with even weaker environmental laws, the government believes that strengthening regulation may repel potential investors, depriving it of market share.[8] This may be one case when being better may not always be better. In this race-to-the-bottom, the worst laws can be the best source of comparative advantage.

Beyond affecting developing country governments' willingness and capacity to undertake the required local interventions for improving environmental regulation, the CDM may also be undermining their determination and ability to demand the much larger reparations for the "ecological debt" owed to them by developed countries. To the extent that the CDM is being promoted as the best (and in some cases the only) conduit for financial transfers from developed countries to developing countries, the scheme may be undermining developing countries' standing demand for the adaptation and mitigation funds that developed countries are obliged, under the UN climate change agreements, to extend to poorer countries.

It should be recalled that the CDM itself was adopted at the 1997 UNFCCC conference as a result of a successful effort by the United States to kill a proposal—first proposed by Brazil and subsequently supported by most developing countries—for a "Clean Development Fund" (CDF). Had it been adopted, the CDF would have penalized industrialized countries that exceeded their emissions targets and used the proceeds from these penalties to fund clean energy projects in developing countries.[9] Instead, the CDM, as it is currently operationalized, allows developed countries to use their advantage in wealth to buy their way out of their emissions reductions commitments, in a scheme that their own corporations are likely to earn from, and in a way that leaves developing country governments with little power over the financial flows. In this light, the CDM is an arrangement that developing countries are being forced to accept in the absence of more acceptable offers; a compromise which the Philippine government is determined to make the most of.

8 Lohmann, 176.

9 *Ibid.*

Conclusion

The Montalban power plant hums quietly now, sucking in the stench from the nearby landfill, turning trash into cash. With no less than Philippine President Gloria Macapagal-Arroyo opening its doors at its inauguration, the plant has been feted as a benevolent investment that would not only make money from energy, but also prevent climate change. Downstream, the leachate flows. Farther away, somewhere in Europe, another power plant— perhaps one of the many coal-fired ones covered by emissions caps—hums along, spewing more smoke than it would have thanks to carbon credits from Montalban.

By itself, the Montalban power plant summarizes in one case the common problematic features of many CDM projects in the country. A "waste-to-energy" technology, the power plant demands increasing trash flows to landfills—a significant source of emissions—to generate credits. Owned by one of the largest, most politically connected mining corporations in the Philippines, the project boosts the profits of an extractive business that seeks to expand its operations, thereby potentially clearing more forests, polluting more rivers, and displacing more people. All this for emission "reductions" that could not only be achieved but exceeded if the government enforced an existing law on waste segregation and by communities acting to reduce waste. But with government itself earning from the CDM and with communities sidelined by the companies that earn from waste, such actions become less likely to be carried out, thanks to the CDM.

As this report has shown, these fundamental problems characterize most of the CDM projects from the Philippines. Rather than being manifestations of only the particular projects that have so far been approved and that may therefore change when other projects are added, these problems appear to be direct consequences of the underlying assumptions and operational methodology of the CDM scheme as applied in the context of the existing power relations and governance structures in the Philippines.

In assuming that all carbon "reductions" are equal—i.e., that it does not matter who does the reduction or where it is done, the CDM ends up providing an additional revenue stream to powerful conglomerates which are ultimately responsible for emitting relatively more greenhouse gases, while at the same time marginalizing communities who could potentially do much more to reduce emissions. Heedless of the resource and power imbalances in a country, the CDM ends up providing more opportunities to larger enterprises that have the resources to pay for the steep transaction costs and other expenses involved in developing a project—resources that few communities or organizations enjoy. Blind to the profiles of project developers and oblivious to the political context in which they operate, the CDM ends up entrenching the power relations that enable continued environmental degradation and injustice.

In accepting that "business-as-usual" is the only possible future, the CDM ends up affirming the questionable claim that no better alternative is possible except that offered by CDM developers. For example, that the only alternative to not capturing landfill gas is for it to keep emitting methane, when in fact, another alternative is not to have landfills

In accepting that "business-as-usual" is the only possible future, the CDM ends up affirming the questionable claim that no better alternative is possible except that offered by CDM developers.

A network of pipes collects methane gas from the decomposing garbage buried in the landfill. The collected gas is then converted by the Montalban power plant into electricity. But there would be negligible gas if garbage were segregated, as required under an existing law. (By Sonny Yabao)

in the first place; or that the only alternative to waste is for cement plants to burn it, when in fact a better solution is for alternatives to cement to be found. Since it does not matter how "reductions" are achieved, the CDM ends up incapable of differentiating between projects that deepen fossil fuel dependence and those that actually transition the economy towards a more sustainable future. The CDM is unable to distinguish between "end-of-pipe" options and solutions that really address the roots of problem.

Given these intrinsic characteristics, only more of the same can be expected of the CDM scheme in the future: support for unsustainable solutions, reward for dirty businesses, and disincentives against government initiatives and community action—all these while allowing industrialized countries to continue increasing their emissions beyond their Kyoto Protocol-assigned limits.

In the end, this scheme may indeed provide short-term economic benefits to a small group of investors and to the government, but these will ultimately come at the cost of the long-term well-being, security, and possibly even survival of millions of people in the country and the rest of the world. In fact, for the communities and peoples affected by and struggling against the depredations of the corporations that earn from and expand their businesses with the support of CDM revenues, the damage is being felt now.

For all the factors favoring the expansion of this scheme, however, the CDM's viability may yet be undermined by one flawed assumption at the core of all project "baselines": that is, that people cannot choose a future different from the one others have chosen for them. ■

ANNEX 1

Calculation of Estimated CDM Revenues from the Philippines

The following estimates were calculated to provide a sense of the magnitude of – and to allow for objective comparisons between – specific CDM projects. These are not intended to predict what the actual revenues will be for each project developer as that will depend on the prevailing market price at the time the "reductions" are bought and sold, as well as on the particular revenue-sharing arrangements between developers of each particular project. Some projects involve foreign developers paying local developers a set amount based on a pre-agreed price per unit of reduction; in this case, any additional revenues or losses accrue to them, not to the local developer. Others, however, agree to share the losses or earnings from any price fluctuations.

Data on average annual reductions and crediting period were taken from each project's "Project Design Document" publicly available on the CDM website. Estimated revenues were calculated using the estimated price range per unit of reduction for 2008-2012, as calculated and used in a UN Framework Convention on Climate Change report [United Nations Framework Convention On Climate Change, *Investment And Financial Flows To Address Climate Change* (Bonn, Germany: 2007)]. Using this estimate, estimated revenues in US$ are calculated by multiplying the total claimed reductions with three predicted prices: the lower bound, which is assumed to be the price that will be the lower end of the UNFCCC estimate, US$13.50; the average predicted price of US$26.30; and an upper bound using the highest predicted price of US$33.75.

To convert the amounts to Philippine pesos (₱), we used the average exchange rate for the last 5 months (January to May 2005), US$1=₱47.8, as provided by the Philippine Central Bank, and simply added 10% of said rate to estimate a band: its lower limit would be US$1=43.02 and upper limit would be US$1=52.58. To estimate the range of revenues, we multiplied the expected revenue in US$ with these three rates. To get the lower bound, we multiplied the US$ revenue assuming the low CDM price with the low exchange rate (weak dollar); to get the predicted average, we multiplied the US$ revenue assuming the average CDM price with the average exchange rate; and to get the upper bound, we multiplied the US$ revenue assuming the high CDM price with the high exchange rate (strong dollar).

For the purposes of this report, the estimated revenues also do not account for the impacts of inflation and changes in interest rates in the coming years. These will not have effects on the projects' proportion relative to each other, which is the primary information sought in the estimation. More complex calculations can be considered but their outcomes are unlikely to contradict the basic observations of this report.

	Name of Project Registered Projects	Average Annual Reductions	Crediting Period (No. of Years)	Total 'Reductions'
1	Montalban Landfill Methane Recovery and Power Generation Project	589,993	10	5,899,930
2	Quezon City Controlled Disposal Facility Biogas Emission Reduction Project	116,339	10	1,163,390
3	First Farmers Holding Corporation (FFHC) Bagasse Cogeneration Plant	119,787	7	838,509
4	Wastewater Treatment using a Thermophilic Anaerobic Digestor at an Ethanol Plant in the Philippines	95,896	7	671,272
5	Hedcor Sibulan 42.5 MW Hydroelectric Power Project	95,174	7	666,218
6	Philippine Sinter Corporation Sinter Cooler Waste Heat Recovery Power Generation Project	61,702	10	617,020
7	20 MW Nasulo Geothermal Project	74,975	7	524,825
8	NorthWind Bangui Bay Project	56,788	7	397,516
9	San Carlos Renewable Energy Project	37,658	7	263,606
10	Makati South Sewage Treatment Plant Upgrade with On-Site Power	28,729	7	201,103
11	Biomass Boiler Project in the Philippines	18,529	7	129,703
12	Excel Farm Methane Recovery and Electricity Generation Project	12,526	10	125,260
13	Amigo Farm Methane Recovery and Electricity Generation Project	5,761	10	57,610
14	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2003)	8,063	7	56,441
15	Paramount Integrated Corporation Methane Recovery and Electricity Generation	7,582	7	53,074
16	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1005)	6,779	7	47,453
17	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1002)	6,679	7	46,753
18	Laguna de Bay Community Waste Management Project 1	6,058	7	42,406
19	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Bundled Project (ADSW RP1001)	5,806	7	40,642
20	Rocky Farms, Inc. Methane Recovery and Electricity Generation Project	3,201	10	32,010
21	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2004)	4,395	7	30,765
22	Goldi-Lion Agricultural Development Corporation Methane Recovery and Electricity Generation Project	3,994	7	27,958
23	Joliza Farms Inc. Methane Recovery	3,656	7	25,592
24	D&C Concepcion Farms, Inc. Methane Recovery and Electricity Generation Project	3,348	7	23,436
25	Superior Hog Farms Methane Recovery	3,346	7	23,422
26	Lanatan Agro-Industrial Inc. Methane Recovery and Electricity Generation Project	3,227	7	22,589
27	Gaya Lim Farm Inc. Methane Recovery	3,130	7	21,910
28	Gold Farm Livestocks Corporation Methane Recovery and Electricity Generation	2,929	7	20,503
29	Uni-Rich Agro-Industrial Corporation Methane Recovery and Electricity Generation	2,929	7	20,503
30	Anaerobic Digestion Swine Wastewater Treatment with On-Site Power Project (ADSW RP2001)	2,403	7	16,821
31	Bondoc Realty Methane Recovery and Electricity Generation Project	1,785	7	12,495
32	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2008)	1,415	7	9,905
	Total from registered projects	1,394,582		12,130,640

Estimated Revenues in US$			Estimated Revenues in ₱		
LOWER BOUND: with low CDM price	AVERAGE: with average CDM price	UPPER BOUND: High CDM Price, High Exchange Rate	LOWER BOUND: Low CDM price, Low Exchange Rate	Average CDM Price, Average Exchange Rate	UPPER BOUND: with high CDM price
79,649,055	139,238,348	199,122,638	3,426,502,346	6,655,593,034	10,469,868,280
15,705,765	27,456,004	39,264,413	675,662,010	1,312,396,991	2,064,522,809
11,319,872	19,788,812	28,299,679	486,980,872	945,905,233	1,487,997,109
9,062,172	15,842,019	22,655,430	389,854,639	757,248,518	1,191,222,509
8,993,943	15,722,745	22,484,858	386,919,428	751,547,201	1,182,253,807
8,329,770	14,561,672	20,824,425	358,346,705	696,047,922	1,094,948,267
7,085,138	12,385,870	17,712,844	304,802,615	592,044,586	931,341,324
5,366,466	9,381,378	13,416,165	230,865,367	448,429,849	705,421,956
3,558,681	6,221,102	8,896,703	153,094,457	297,368,656	467,788,617
2,714,891	4,746,031	6,787,226	116,794,589	226,860,272	356,872,356
1,750,991	3,060,991	4,377,476	75,327,611	146,315,360	230,167,701
1,691,010	2,956,136	4,227,525	72,747,250	141,303,301	222,283,265
777,735	1,359,596	1,944,338	33,458,160	64,988,689	102,233,266
761,954	1,332,008	1,904,884	32,779,240	63,669,963	100,158,788
716,499	1,252,546	1,791,248	30,823,787	59,871,718	94,183,794
640,616	1,119,891	1,601,539	27,559,279	53,530,780	84,208,907
631,166	1,103,371	1,577,914	27,152,740	52,741,124	82,966,705
572,481	1,000,782	1,431,203	24,628,133	47,837,360	75,252,627
548,667	959,151	1,371,668	23,603,654	45,847,427	72,122,277
432,135	755,436	1,080,338	18,590,448	36,109,841	56,804,146
415,328	726,054	1,038,319	17,867,389	34,705,381	54,594,800
377,433	659,809	943,583	16,237,168	31,538,861	49,613,568
345,492	603,971	863,730	14,863,066	28,869,823	45,414,923
316,386	553,090	790,965	13,610,926	26,437,683	41,588,940
316,197	552,759	790,493	13,602,795	26,421,890	41,564,096
304,952	533,100	762,379	13,119,014	25,482,199	40,085,875
295,785	517,076	739,463	12,724,671	24,716,233	38,880,938
276,791	483,871	691,976	11,907,527	23,129,024	36,384,111
276,791	483,871	691,976	11,907,527	23,129,024	36,384,111
227,084	396,976	567,709	9,769,132	18,975,434	29,850,126
168,683	294,882	421,706	7,256,721	14,095,360	22,173,315
133,718	233,758	334,294	5,752,527	11,173,632	17,577,165
163,763,640	286,283,104	409,409,100	7,045,111,793	13,684,332,371	21,526,730,478

	Projects Undergoing Registration	Average Annual Reductions	Crediting Period (No. of Years)	Total Reductions
1	Emission reductions through partial substitution of fossil fuels in three cement plants of Holcim Philippines Inc.	207,628	7	1,453,396
2	40 MW Northern Negros Geothermal Project	174,899	7	1,224,293
3	FR Cement Corporation Partial Replacement of Fossil Fuel by Rice Husk Biomass in the Production of Portland Cement	94,528	10	945,280
4	Metro Clark Landfill Gas Capture System	83,243	7	582,701
5	Fuel Switch Project for Process Steam Generation Using Renewable Biomass Residue of Pancentury	52,172	10	521,720
6	Cebu CTRADE Biogas to Energy Project	43,714	10	437,140
7	Sumilao SURE Eco Energy Philippines Inc. Biogas to Energy Project	42,159	10	421,590
8	Swine Farm Methane Capture and Combustion/ Utilization project IDES20091	57,427	7	401,989
9	Pristine Environment's Organic Waste Composting Project in Vitas, Tondo, Manila	52,989	7	370,923
10	Binga Hydro Electrical Power Plant (BHEPP) rehabilitation project	49,146	7	344,022
11	Buluan 6MW Biomass Co-Generation Power Plant and Wastewater Treatment Project	46,910	7	328,370
12	Mariwasa Siam Ceramics Biomass Hot Air Generator and Gasifier Fuel Switch Project	32,727	10	327,270
13	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP2024)	46,622	7	326,354
14	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP3001)	38,976	7	272,832
15	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP3003)	36,430	7	255,010
16	Cabulig River Mini-Hydroelectric Power Project	32,407	7	226,849
17	Anaerobic Digestion Swine Wastewater Treatment With On-Site Power Project (ADSW RP3002)	32,255	7	225,785
18	Secondary catalytic reduction of N2O emissions at ONPI nitric acid plant in Bacong, the Philippines	29,474	7	206,318
19	Fil-Am Foods, Inc. Methane Recovery and Electricity Generation Project	28,039	7	196,273
20	Batangas CTRADE Biogas to Energy Project	13,661	10	136,606
21	La Suerte Rice Husk Cogeneration Project	17,385	7	121,695
22	Family Choice and Golden Season 2MW Rice Husk Projects	16,312	7	114,184
23	Republic Cement Corporation – Teresa Plant Waste Heat Recovery Project	15,770	7	110,390
24	San Andres Producers Cooperative Biomass Steam Generation Project	15,654	7	109,578
25	Laguna de Bay Community Watershed Rehabilitation Project -2	4,205	20	84,100
26	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1004)	12,000	7	84,000
27	Laguna de Bay Community Waste Management Project -2	8,901	7	62,307
28	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1007)	8,144	7	57,008
29	Laguna de Bay Community Watershed Rehabilitation Project -1	2,811	20	56,220
30	Tarlac Everlasting Farms, Inc. and Tarlac Sentra Farms, Inc. Methane Recovery and Electricity Generation Project	7,081	7	49,567
31	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1006)	6,442	7	45,094

Estimated Revenues in US$			Estimated Revenues in ₱		
LOWER BOUND: with low CDM price	AVERAGE: with average CDM price	UPPER BOUND: with high CDM price	LOWER BOUND: Low CDM price, Low Exchange Rate	AVERAGE: Average CDM Price, Average Exchange Rate	UPPER BOUND: High CDM Price, High Exchange Rate
19,620,846	34,300,146	49,052,115	844,088,795	1,639,546,960	2,579,160,207
16,527,956	28,893,315	41,319,889	711,032,646	1,381,100,447	2,172,599,750
12,761,280	22,308,608	31,903,200	548,990,266	1,066,351,462	1,677,470,256
7,866,464	13,751,744	19,666,159	338,415,260	657,333,344	1,034,046,627
7,043,220	12,312,592	17,608,050	302,999,324	588,541,898	925,831,269
5,901,390	10,316,504	14,753,475	253,877,798	493,128,891	775,737,716
5,691,465	9,949,524	14,228,663	244,846,824	475,587,247	748,143,074
5,426,852	9,486,940	13,567,129	233,463,152	453,475,751	713,359,630
5,007,461	8,753,783	12,518,651	215,420,951	418,430,818	658,230,683
4,644,297	8,118,919	11,610,743	199,797,657	388,084,338	610,492,841
4,432,995	7,749,532	11,082,488	190,707,445	370,427,630	582,717,193
4,418,145	7,723,572	11,045,363	190,068,598	369,186,742	580,765,160
4,405,779	7,701,954	11,014,448	189,536,613	368,153,420	579,139,650
3,683,232	6,438,835	9,208,080	158,452,641	307,776,323	484,160,846
3,442,635	6,018,236	8,606,588	148,102,158	287,671,681	452,534,371
3,062,462	5,353,636	7,656,154	131,747,094	255,903,820	402,560,564
3,048,098	5,328,526	7,620,244	131,129,154	254,703,543	400,672,416
2,785,293	4,869,105	6,963,233	119,823,305	232,743,209	366,126,765
2,649,686	4,632,043	6,624,214	113,989,470	221,411,646	348,301,159
1,844,181	3,223,902	4,610,453	79,336,667	154,102,496	242,417,592
1,642,883	2,872,002	4,107,206	70,676,805	137,281,696	215,956,905
1,541,484	2,694,742	3,853,710	66,314,642	128,808,687	202,628,072
1,490,265	2,605,204	3,725,663	64,111,200	124,528,751	195,895,334
1,479,303	2,586,041	3,698,258	63,639,615	123,612,750	194,454,379
1,135,350	1,984,760	2,838,375	48,842,757	94,871,528	149,241,758
1,134,000	1,982,400	2,835,000	48,784,680	94,758,720	149,064,300
841,145	1,470,445	2,102,861	36,186,036	70,287,281	110,568,445
769,608	1,345,389	1,924,020	33,108,536	64,309,585	101,164,972
758,970	1,326,792	1,897,425	32,650,889	63,420,658	99,766,607
669,155	1,169,781	1,672,886	28,787,027	55,915,541	87,960,359
608,769	1,064,218	1,521,923	26,189,242	50,869,640	80,022,685

	Projects Undergoing Registration	Average Annual Reductions	Crediting Period (No. of Years)	Total Reductions
32	Red Dragon (I) Farm Methane Recovery and Electricity Generation Project	5,380	7	37,660
33	New Santo Domingo Stock Farm Methane Recovery and Electricity Generation Project	4,795	7	33,565
34	La Suerte Rice Husk-Fired Cogeneration Project	4,726	7	33,082
35	Everlasting & Sentra Farm Corporation Methane Recovery and Electricity Generation	4,086	7	28,602
36	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2007)	4,003	7	28,021
37	Lanatan Methane Recovery	3,986	7	27,902
38	Santo Domingo Methane Recovery	2,997	7	20,979
39	Red Dragon (II) Methane Recovery	2,954	7	20,678
40	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2006)	2,773	7	19,411
41	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP2005)	2,679	7	18,753
42	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1008)	2,531	7	17,717
43	Red Dragon (II) E-Pig Farm Methane Recovery and Electricity Generation Project	2,003	7	14,021
44	Anaerobic Digestion Swine Wastewater Treatment with On-site Power Bundled Project (ADSW RP1003)	1,802	7	1t2,614
45	Red Dragon Farm Corporation Methane Recovery and Electricity Generation	1,494	7	10,458
	Total estimated revenues from projects undergoing registration	1,356,320		10,422,327
	Total estimated revenues from registered projects and projects undergoing registration			22,552,967

Source: Clean Development Mechanism, Various Project Design Documents, http://cdm.unfccc.int/Projects/index.html (accessed February 3, 2009); Jørgen Fenhann, "CDM Pipeline," United Nations Environment Program Risoe Centre on Energy, Climate and Sustainable Development (URC), http://www.cdmpipeline.org/overview.htm#2 (accessed June 20, 2009); Central Bank of the Philippines, "Peso per US Dollar Rate," http://www.bsp.gov.ph/statistics/spei_new/tab25.htm (accessed June 20, 2009); United Nations Framework Convention on Climate Change, Investment and Financial Flows To Address Climate Change, (Bonn, Germany: 2007), 143.

Estimated Revenues in US$			Estimated Revenues in ₱		
LOWER BOUND: with low CDM price	AVERAGE: with average CDM price	UPPER BOUND: with high CDM price	LOWER BOUND: Low CDM price, Low Exchange Rate	AVERAGE: Average CDM Price, Average Exchange Rate	UPPER BOUND: High CDM Price, High Exchange Rate
508,410	888,776	1,271,025	21,871,798	42,483,493	66,830,495
453,128	792,134	1,132,819	19,493,545	37,864,005	59,563,610
446,607	780,735	1,116,518	19,213,033	37,319,143	58,706,490
386,127	675,007	965,318	16,611,184	32,265,344	50,756,394
378,284	661,296	945,709	16,273,756	31,609,930	49,725,366
376,677	658,487	941,693	16,204,645	31,475,688	49,514,192
283,217	495,104	708,041	12,183,974	23,665,990	37,228,809
279,153	488,001	697,883	12,009,162	23,326,438	36,694,662
262,049	458,100	655,121	11,273,326	21,897,161	34,446,275
253,166	442,571	632,914	10,891,180	21,154,884	33,278,605
239,180	418,121	597,949	10,289,502	19,986,193	31,440,145
189,284	330,896	473,209	8,142,976	15,816,810	24,881,316
170,289	297,690	425,723	7,325,833	14,229,601	22,384,489
141,183	246,809	352,958	6,073,693	11,797,461	18,558,505
140,701,415	245,966,917	351,753,536	6,052,974,852	11,757,218,642	18,495,200,936
304,465,055	532,250,021	761,162,636	13,098,086,645	25,441,551,013	40,021,931,414

ANNEX 2

Power Plants in the Philippines

Legend: ■-Linked to Aboitiz Group ■-Linked to Lopez Group

	Plants	Owner	Location	Capacity MW	
				Installed	Dependable
Coal	Masinloc I	AES Transpower Pte. Ltd	Masinloc, Zambales	300.00	203.81
	Masinloc 2	AES Transpower Pte. Ltd	Masinloc, Zambales	300.00	165.37
	Asia Pacific Energy Corp.	Asia Pacific Energy Corp. (APEC)	Mabalacat, Pampanga	50.00	42.00
	Quezon Private Power Limited	Quezon Private Power	Mauban, Quezon	511.00	460.00
	Pagbilao Unit 1	TeaM Energy	Pagbilao, Quezon	364.00	364.00
	Pagbilao Unit 2	TeaM Energy	Pagbilao, Quezon	364.00	364.00
	Sual I	TeaM Energy	Sual, Pangasinan	647.00	590.87
	Sual 2	TeaM Energy	Sual, Pangasinan	647.00	562.01
	Calaca 1		Calaca, Batangas	300.00	142.93
	Calaca 2		Calaca, Batangas	300.00	160.71
	Sangi Power Plant	Global Business Power Corporation	Toledo City, Cebu	88.80	55.00
	Naga Power Plant 1	Salcon Power Corporation	Naga, Cebu	52.50	48.58
	Naga Power Plant 2	Salcon Power Corporation	Naga, Cebu	56.80	51.79
	Mindanao Coal-fired Thermal Power Plant I	STEAG	Villanueva, Misamis Oriental	116.00	105.00
	Mindanao Coal-fired Thermal Power Plant II	STEAG	Villanueva, Misamis Oriental	116.00	96.00
Diesel	Angeles PI DPP	Angeles Electric Corporation	Angeles City	30.00	30.00
	FCVC DPP	Cabanatuan Electric Corporation	Cabanatuan City	25.60	23.70
	East Asia Diesel (Duracom Unit 3 and 4)	East Asia Utilities	Navotas, Metro Manila	109.00	109.00
	Enron Subic 2	Enron Power Corporation (USA)	Olongapo, Zambales	116.00	114.46
	Bauang Diesel Power Plant	First Private Power Corp.	Bauang, La Union	235.20	225.33
	Magellan Cogen (CEPZA)	Magellan Cogen Utilities	Rosario, Cavite	63.00	-
	Duracom Unit 1 and 2	NPC PSALM	Navotas, Metro Manila	133.38	113.00
	Tarlac Electric	Tarlac Electric Inc.	Capas, Tarlac	18.90	12.60
	Trans Asia Power	Trans Asia Power Generation Corporation	La Union	52.00	50.00
	Southern Philippines Power Corporation	Alsons/Tomen (Phil/Japan)	Alabel, Sarangani	59.00	55.35
	Western Mindanao Power Corp.	Alsons/Tomen (Phil/Japan)	Zamboanga City	113.00	100.00
	Cotabato Light and Power Company	Cotabato Light	Cotabato	10.00	7.50
	Davao Light and Power Company	Davao Light	Davao City	58.69	42.00
	Mindanao Energy Systems	Mindanao Energy Systems	Cagayan de Oro City	18.90	18.90
	Power Barge 117	Mitsui/BWES (Japan/Denmark)	Nasipit, Agusan del Norte	100.00	99.76
	Power Barge 118	Mitsui/BWES (Japan/Denmark)	Maco, Davao del Norte	100.00	90.69
	Power Barge 104	NPC	Davao City	32.00	23.92

	Plants	Owner	Location	Capacity MW	
				Installed	Dependable
Diesel	Iligan Diesel Power Plant I	NPC PSALM	Iligan City	62.70	39.82
	Iligan Diesel Power Plant II	NPC PSALM	Iligan City	40.00	-
	Cebu Private Power Corp.	Cebu Private Power Corp.	Cebu City	70.00	61.72
	East Asia Utilities (MEPZA)	East Asia Utilities	Cebu City	49.70	42.00
	Panay Power Corp.	Global Business Power Corporation	Iloilo City	74.88	69.00
	Carmen Diesel Power Plant	Global Business Power Corporation	Toledo City, Cebu	45.80	37.40
	20 MW Bunker Fuel	Global Business Power Corporation	La Paz, Iloilo	20.00	18.00
	15 MW Bunker Fuel	Global Business Power Corporation	Nabas, Aklan	12.60	7.60
	5 MW Bunker Fuel	Global Business Power Corporation	New Washington, Aklan	5.00	5.00
	Power Barge (PB) 103	NPC PSALM	Estancia, Iloilo	32.00	19.06
	Panay Diesel Power Plant 1	NPC PSALM	Tinocuan, Dingle, Iloilo	36.50	19.78
	PB 101	NPC PSALM	Iloilo	32.00	22.80
	PB 102	NPC PSALM	Obrero, Iloilo	32.00	23.09
	Panay Electric Company	Panay Electric Company (PECO)	Iloilo City	19.85	-
	Bohol Diesel Power Plant	SPC Power Corporation	Tagbilaran City	22.00	18.00
	Panay Diesel Power Plant III (Pinamucan)	SPC Power Corporation	Dingle, Iloilo	110.20	42.08
	Cebu Diesel Power Plant 1	SPC Power Corporation	Naga, Cebu	37.80	30.15
	Guimaras Bunker C oil-fired Power Project	Trans Asia Power Generation Corporation	San Miguel, Jordan, Guimaras	3.40	3.40
Gas	Hopewell Gas Turbine Power Plant	Mirant (Navotas) Corp.	Navotas, Metro Manila	310.00	-
	Limay combined-cycle gas turbine Power Plant	NPC PSALM	Limay, Bataan	620.00	600.73
	Cebu Land-based GT 1	NPC-IPP	Naga, Cebu	27.50	24.75
	Cebu Land-based GT 2	NPC-IPP	Naga, Cebu	27.50	23.42
Geothermal	Makiling-Banahaw (MakBan) Geothermal Power Plant 1	AP Renewables Inc.	Calauan, Laguna	63.20	58.13
	MakBan 2	AP Renewables Inc.	Calauan, Laguna	63.20	43.84
	MakBan 3	AP Renewables Inc.	Calauan, Laguna	63.20	56.10
	MakBan 4	AP Renewables Inc.	Calauan, Laguna	63.20	58.39
	MakBan 5	AP Renewables Inc.	Calauan, Laguna	55.00	14.87
	MakBan 6	AP Renewables Inc.	Calauan, Laguna	55.00	-
	MakBan 7(D)	AP Renewables Inc.	Calauan, Laguna	20.00	18.25
	MakBan 8(D)	AP Renewables Inc.	Calauan, Laguna	20.00	12.56
	MakBan 9(E)	AP Renewables Inc.	Calauan, Laguna	20.00	17.10
	Makban 10(E)	AP Renewables Inc.	Calauan, Laguna	20.00	12.54
	Tiwi Geothermal Power Plant 1	AP Renewables Inc.	Tiwi, Albay	59.00	13.53
	Tiwi 2	AP Renewables Inc.	Tiwi, Albay	59.00	26.36
	Tiwi 3	AP Renewables Inc.	Tiwi, Albay	43.69	-

	Plants	Owner	Location	Capacity MW	
				Installed	Dependable
Geothermal	Tiwi 4	AP Renewables Inc.	Tiwi, Albay	-	-
	Tiwi 5	AP Renewables Inc.	Tiwi, Albay	57.00	43.66
	Tiwi 6	AP Renewables Inc.	Tiwi, Albay	57.00	29.03
	Bacon-Manito (BacMan) Geothermal Power Plant I-1	NPC PSALM	Bacon, Sorsogon	55.00	23.24
	Bac Man I-2	NPC PSALM	Bacon, Sorsogon	55.00	-
	Bac Man II-1	NPC PSALM	Bacon, Sorsogon	20.00	-
	Bac Man II (Botong)	NPC PSALM	Bacon, Sorsogon	20.00	10.34
	MakBan Ormat	Ormat Inc. USA	Bay, Laguna	15.73	-
	Manito		Albay	1.50	1.50
	Mindanao I (Mt. Apo)	**PNOC**	**Kidapawan, North Cotabato**	**54.24**	**49.75**
	Mindanao II (Mt. Apo)	**PNOC**	**Kidapawan, North Cotabato**	**54.24**	**49.75**
	Palinpinon Geothermal Power Plant 1	NPC PSALM	Valencia, Negros Oriental	112.50	105.40
	Palinpinon Geothermal Power Plant 2	NPC PSALM	Valencia, Negros Oriental	80.00	78.21
	Leyte Geothermal Power Plant	NPC PSALM	Lim-ao, Kananga, Leyte	112.50	80.94
	Tongonan Geothermal Power Plant	**PNOC**	**Tongonan, Leyte**	**610.18**	**584.29**
	Northern Negros Geothermal Power Plant	**PNOC**	**Bago City, Negros Occidental**	**49.00**	**12.00**
Large Hydroelectric	Casecnan Hydroelectric Power Plant	CE Casecnan Water and Energy Company, Inc.	Pantabangan, Nueva Ecija	165.00	150.00
	Kalayaan Pumped-up Power Plant 1 & 2	Electric Power Development Co., Ltd	Kalayaan, Laguna	354.00	354.00
	Kalayaan 3 & 4	Electric Power Development Co., Ltd	Kalayaan, Laguna	355.00	355.00
	Caliraya Hydroelectric Power Plant	Electric Power Development Co., Ltd	Lumban, Laguna	23.50	23.50
	Botocan Hydroelectric Power Plant	Electric Power Development Co., Ltd	Majayjay, Laguna	23.00	21.94
	Pantabangan-Masiway Hydroelectric Power Plant	**First Gen Hydro Power Corp.**	**Pantabangan, Nueva Ecija**	**112.00**	111.00
	Ampohaw and Bineng Plants	Hydro Electric Development Corp. (Phils.)	Banengbeng, Sablan, Benguet	18.35	8.98
	Bakun AC Hydroelectric Power Plant	Luzon Hydro Corporation	Alilem, Ilocos Sur	70.00	35.06
	Angat Hydroelectric Power Plant	NPC PSALM	Norzagaray, Bulacan	246.00	205.24
	San Roque Multi-purpose Project	San Roque Power Corporation (SRPC)	San Manuel, Pangasinan	345.00	345.00
	Magat Hydroelectric Power Plant	SN Aboitiz Power, Inc.	Ramon, Isabela	360.00	317.00
	Ambuklao Hydroelectric Power Plant	SN Aboitiz Power, Inc.	Bokud, Benguet	75.00	-
	Binga Hydroelectric Power Plant	SN Aboitiz Power, Inc.	Itogon, Benguet	100.00	78.82
	Agus River Hydroelectric Power Plant Unit 1	NPC PSALM	Marawi City, Lanao Del Sur	40.00	37.69

	Plants	Owner	Location	Capacity MW	
				Installed	Dependable
Large Hydroelectric	Agus 1 Unit 2	NPC PSALM	Marawi City, Lanao Del Sur	40.00	33.63
	Agus 2	NPC PSALM	Saguiaran, Lanao Del Sur	180.00	162.71
	Agus 4	NPC PSALM	Baloi, Lanao del Norte	158.10	149.73
	Agus 5	NPC PSALM	Buru-un, Iligan City	55.00	52.32
	Agus 6	NPC PSALM	Buru-un, Iligan City	200.00	178.12
	Agus 7	NPC PSALM	Buru-un, Iligan City	54.00	49.42
	Pulangi Hydroelectric Power Plant 4	NPC PSALM	Maramag, Bukidnon	255.00	225.77
Natural Gas	**Sta. Rita combined-cycle natural gas-fired Power Plant**	**First Gas Power Corp.**	**Sta. Rita, Batangas**	**1,060.00**	**1,000.00**
	San Lorenzo natural gas-fired Power Plant	**First Gas Power Corp.**	**Sta. Rita, Batangas**	**500.00**	**500.00**
	KEPCO Ilijan Natural Gas Power Plant	KEPCO (Ilijan)	Batangas City	1,271.00	1,062.42
	San Antonio	**PNOC-EDC**	**Echague, Isabela**	**3.00**	**3.00**
Oil	Malaya Thermal Power Plant 1	KEPCO	Pililla, Rizal	300.00	300.00
	Malaya Thermal Power Plant 2	KEPCO	Pililla, Rizal	350.00	345.83
Small Hydroelectric	Inarihan	Bicol Hydropower Corp.	Naga, Camarines Sur	0.96	0.96
	Aqua Grande	Ilocos Norte Electric Cooperative (INECO)	Pagudpod, Ilocos Norte	4.50	4.50
	Dawara	Ilocos Sur Electric Cooperative (ISECO)	Suyo, Ilocos Sur	0.53	0.53
	Magat A&B	Isabela Electric Cooperative (ISELCO) I	Ramon, Isabela	2.52	2.52
	Tumauini	Isabela Electric Cooperative (ISELCO) II	Tumauini, Isabela	0.25	0.25
	San Juan River	Kalayaan Ice Plant	Kalayaan, Laguna	0.15	0.15
	Amburayan	La Union Electric Cooperative (LUELCO)	Supiden, La Union	0.20	0.20
	NIA-Baligatan	NON-NPC	Benguet	6.00	6.00
	Northern Mini Hydro Corporation	Northern Mini Hydro Corporation (NMHC)	Bakun, Benguet	12.40	7.34
	Dulangan	Oriental Mindoro Cooperative (ORMECO)	Oriental Mindoro	1.60	1.60
	Bachelor	Pangasinan Electric Cooperative (PANELCO)	Natividad, Pangasinan	0.75	0.75
	Barit Hydroelectric Power Plant	People's Energy Services Inc.	Buhi, Camarines Sur	1.80	1.80
	Balugbog	Phil. Power Dev. Co.	Nagcarlan, Laguna	0.65	0.65
	Palapaquin	Phil. Power Dev. Co.	San Pablo, Laguna	0.40	0.40
	Sal-angan Plant	Philex Mining Corp.	Itogon, Benguet	0.50	0.50
	Yabo	PROSAMAPI Coop.	Pili, Camarines Sur	0.20	0.20
	Cawayan Hydroelectric Power Plant	Sorsogon Electric Cooperative (SORECO) II	Guinlajon, Sorsogon	0.40	0.40

	Plants	Owner	Location	Capacity MW	
				Installed	Dependable
Small Hydroelectric	Club John Hay		Baguio City	0.56	0.56
	Kumalarang	BASELCO	Lantawan, Basilan	0.68	0.68
	Balactasan	Basilan Electric Cooperative (BASELCO)	Lamitan, Basilan	0.27	0.27
	Bubunawan Mini-hydroelectric Power Plant	Bubunawan Power Company Inc.	Baungon, Bukidnon	7.00	4.89
	Agusan Mini-hydroelectric Power Plant	**FG Bukidnon Power Corp.**	**Manolo Fortich, Bukidnon**	**1.60**	**1.60**
	Talomo Hydroelectric Power Plant	HEDCOR	Davao City	3.70	3.26
	Matling	Matling Industrial Corp.	Malabang, Lanao del Sur	1.50	1.50
	Mountain View		Valencia, Bukidnon	0.80	0.80
	Janopol Hydroelectric Power Plant	Bohol Electric Cooperative (BOHECO)	Bohol	5.00	5.00
	Basak	CEBECO	Badian, Cebu	0.50	0.50
	Matutinao	CEBECO	Badian, Cebu	0.72	0.72
	Mantayupan	Cebu Electric Cooperative Inc. (CEBECO)	Barili, Cebu	0.50	0.50
	Amanjuray	Eastern Samar Electric Coop (ESAMELCO)	Lawaan, Eastern Samar	-	-
	Amlan Hydroelectric Power Plant	ICS Renewables Inc.	Amlan, Negros Oriental	0.80	0.77
	Ton-ok	Samar Electric Coop (SAMELCO)	Calbayog, Western Samar	1.08	1.08
	Henabian	Southern Leyte Electric Cooperative (SOLECO)	St. Bernard, Southern Leyte	0.81	0.81
	Loboc Hydroelectric Power Plant	Sta. Clara Intl Corp.	Loboc, Bohol	1.20	1.11
Solar	Solar Photovoltaic Power Plant	Cagayan Electric Power and Light Co.	Cagayan de Oro City	1.00	1.00
Wind	NorthWind Power	NorthWind Power Development Corp.	Bangui Bay, Ilocos Norte	25.00	8.75
	Total			**15,937.06**	**13,204.59**

Source: Freedom from Debt Coalition, "From State Monopoly to de facto Electricity Oligarchy: A Study of the development of privatization of NPC assets," November 2008.

ANNEX 3

Calculation of Estimates of Potential Funds from Ecological Debt Reparations, Adaptation and Mitigation, CDM Adaptation Funds, and Government Funding

REQUIREMENTS

A.	Potential share of the Philippines in developed countries' reparations for 'ecological debt'	₱1.8 trillion
B.	Potential share of the Philippines from UN Adaptation Funds annually	₱110 billion
C.	Amount required for capital investments for developing renewable energy	₱49 billion
D.	6-year budget for government disaster preparedness	₱29 billion
E.	Estimated value of "reductions" from all CDM projects (registered and undergoing registration)	₱13-40 billion

A. Potential share of the Philippines in developed countries' reparations for 'ecological debt'

According to the most scientific estimate to date, developed countries have wreaked environmental damage on poorer countries worth US$2.3 trillion from 1960 to 2000.[1] This estimate can be seen as providing an initial and partial financial valuation of the rich countries' "ecological debt" to developing countries. [2] There will be many ways to distribute any reparations for this debt among developing countries: by extent of damage to each specific country, by need, by population, or by some other—or combination of various—criteria. To come up with a concrete amount just to indicate range and magnitude—but without proposing that it is the best option, let us assume that the $2.3 trillion in reparations are going to be divided by population. This is arguably the simplest but may not necessarily be the most satisfactory option.

Leaving aside important methodological and political questions just to provide an idea as to the size of what is at stake, we can multiply US$2.3 trillion by the ratio of a specific country's population to the total population of all developing countries. In the case of the Philippines, the country's population as of 2000 was 85 million which is

1 U. Thara Srinivasan, Susan P. Carey, Eric Hallstein, Paul A. T. Higgins, Amber C. Kerr, Laura E. Koteen, Adam B. Smith, Reg Watson, John Harte, and Richard B. Norgaard, "The Debt of Nations and the Distribution of Ecological Impacts from Human Activities," *Proceedings of the National Academy of Sciences* 105, no.5 (2008), 1768–1773, http://www.pnas.org/content/105/5/1768.full.pdf+html (accessed June 29, 2009); Size of Annex 1 countries' economies stood at $34 trillion in 2000 [World Resources Institute, *Climate Analysis Indicators Tool (CAIT) Version 6.0*, (Washington, DC: World Resources Institute, 2009), http://cait.wri.org/ (accessed June 29, 2009)].

2 According to Erik Paredis *et al.*: "The ecological debt of country A consists of (1) the ecological damage caused over time by country A in other countries or in an area under jurisdiction of another country through its production and consumption patterns, and/or (2) the ecological damage caused over time by country A to ecosystems beyond national jurisdiction through its consumption and production patterns, and/or (3) the exploitation or use of ecosystems and ecosystem goods and services over time by country A at the expense of the equitable rights to these ecosystems and ecosystem goods and services by other countries or individuals." (Erik Paredis, Jesse Lambrecht, Gert Goeminne, Wouter Vanhove, "Elaboration of the Concept of Ecological Debt," Center for Sustainable Development-Ghent University, September 2004, 6, http://www.ecologicaldebt.org/documentos/alianza%20de%20acreedores/Gent_concept_ecodebt.pdf (accessed June 29, 2009).

1.7% of the total developing country population of 5.1 billion. Multiplying 1.7% by $2.3 trillion and converting this into pesos using the US$1=₱47.8 exchange rate[3] used throughout this report yields ₱1.8 trillion.

a	Total value of potential reparations for "ecological debt" of developed countries to developing countries	$2.3 trillion
b	Total population of developing countries	5.1 billion
c	Philippine population	85 million
d	Ratio of Philippine population to total population of developing countries (c ÷ b x 100%)	1.7%
e	Share of Philippines in total reparations, if divided by population (d x a)	$38 billion
f	Value of US$1 in Philippine pesos, using average exchange rate	₱47.8
g	Share of Philippines in total reparations, if divided by population, in Philippine pesos (e x f)	₱1.8 trillion

If reparations are going to be divided by what each country needs to cope with the impacts of climate change, then this amount may be bigger given that the Philippines is considered among the worst to be affected by climate change. The reparations can also be divided by the actual ecological damage inflicted on a particular country: while not impossible, this may be fraught with methodological challenges given the cross-border nature of ecological processes.

B. Potential share of the Philippines from UN Adaptation Funds annually

The same assumptions for estimating potential receipts from ecological debt reparations can be used for estimating the Philippines' possible share in the UN Adaptation funds. According to various estimates, in terms of adaptation funds alone, developed countries deserve up to $135 billion a year. [4] Multiplying the Philippines' 1.7% share in total developing country population with this amount and converting this into pesos using the US$1=₱47.8 exchange rate [5] used throughout this report yields ₱110 billion annually.

a	Total value of required UN Adaptation funds annually	$135 billion
b	Total population of developing countries	5.1 billion
c	Philippine population	85 million
d	Ratio of Philippine population to total population of developing countries (c ÷ b x 100%)	1.7%
e	Share of Philippines in total Adaptation Funds, if divided by population (d x a)	$2.3 billion
f	Value of US$1 in Philippine pesos, using average exchange rate	₱47.8
g	Share of Philippines in total Adaptation Funds, if divided by population, in Philippine pesos (e x f)	₱110 billion

3 Central Bank of the Philippines, "Peso per US Dollar Rate," http://www.bsp.gov.ph/statistics/spei_new/tab25.htm (accessed June 29, 2009).

4 "Closing the Gaps: Disaster Risk Reduction and Adaptation to Climate Change in Developing Countries," Report of the Commission on Climate Change and Development, 2009, www.ccdcommission.org/Filer/report/CCD_REPORT.pdf (accessed June 29, 2009); Oxfam, "Adapting to Climate Change: What's Needed in Poor Countries and Who Should Pay," *Oxfam Briefing Paper*, May 29, 2007, www.oxfam.org.au/.../climate-change/.../adapting-to-climate-change.pdf (accessed June 29, 2009); Christian Aid, Global War Chest needed to fight impact of climate change on the poor, April 6, 2007.

5 Central Bank of the Philippines, "Peso per US Dollar Rate."

C. Amount required for capital investments for developing renewable energy

This is taken from the Philippine government's own estimate as stated in the country's official submission to the UN Framework Convention on Climate Change. ("The Philippines' Initial National Communication on Climate Change," December 1999, p.24, unfccc.int/resource/docs/natc/phinc1.pdf [Accessed 29 June 2009]

D. 6-year budget for government disaster preparedness

This amount ($603 million) is from the government's Medium Term Philippine Development Plan, the country's official planning document, converted to pesos using US$1=₱47.8 exchange rate.[6]

E. Estimated value of "reductions" from all CDM projects (registered and undergoing registration)

See Annex 1: Calculation of Estimated CDM Revenues from the Philippines.

6 Rodel D. Lasco, Florencia B. Pulhin, Patricia Ann Jaranilla-Sanchez, Kristin Garcia, and Roberta Gerpacio, "Mainstreaming Climate Change in the Philippines." *World Agroforestry Centre Working Paper* No. 62 (2008), p.6, http://www.worldagroforestry.org/downloads/publications/PDFs/wp08034.pdf (accessed June 29, 2009); Central Bank of the Philippines, "Peso per US Dollar Rate."

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Acknowledgment

We would like to thank the following for agreeing to be interviewed or for providing material for this report. Responsibility for all errors or misinterpretation is solely ours.

Chino Agati, Pollution Adjudication Board, Department of Environment and Natural Resources
Dommel Bacate, Pollution Adjudication Board, Department of Environment and Natural Resources
Gigie Cruz, Global Alliance for Incinerator Alternatives
Pastor Cruz, Montalban Environmental Protection and Development Council
Garrie David, former Executive Director, Presidential Task Force on Climate Change
Lucia Fernandez, Recicladores sin Fronteras (Recyclers without Frontiers)
Romeo Galamgam, Science Research Specialist, Department of Energy Renewable Energy Management Division
Priscilla Naig Goco, Freedom from Debt Coalition Negros
Anne Larracas, Global Alliance for Incinerator Alternatives
Nepomuceno Malaluan, Action for Economic Reforms
Ma Gerarda Asuncion D. Merilo, Senior Environmental Management Specialist, InterAgency Committee on Climate Change
Metodio Palaypay, National Solid Waste Management Commission
Rei Panaligan, Ecological Waste Coalition
Maitet Diokno Pascual, Freedom from Debt Coalition
Arnel Ramos, Official Development Assistance (ODA) Watch
Ronnie Sargento, Supervising Science Research Specialist, Department of Energy Renewable Energy Management Division
Isagani Serrano, Senior VicePresident, Philippine Rural Reconstruction Movement
Neil Tangri, Global Alliance for Incinerator Alternatives
Official who refused to be named in this report, Department of Environment and Natural Resources
William N. Holden, University of Calgary

We would also like to thank the following who, in one way or another, helped us in producing this report:

Antares Gomez Bartolome, Maureen dela Cruz, Mary Joy Manahan, Job Bordamonte, Holly Creenaune, Adam Wolfenden, Dr Maria Macabuac-Ferolin, Dereck Aw, Alvin Camba, Denis Côté, Elinor May Cruz, Sonny Yabao, Ecowaste Coalition, Gaynor Tanyang, and all the staff of Focus on the Global South, especially those who were most directly involved--Nicola Bullard, Jenina Joy Chavez, Joseph Purugganan, Shalmali Guttal, and Lourdes Torres.

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ISBN 978-971-92886-9-5